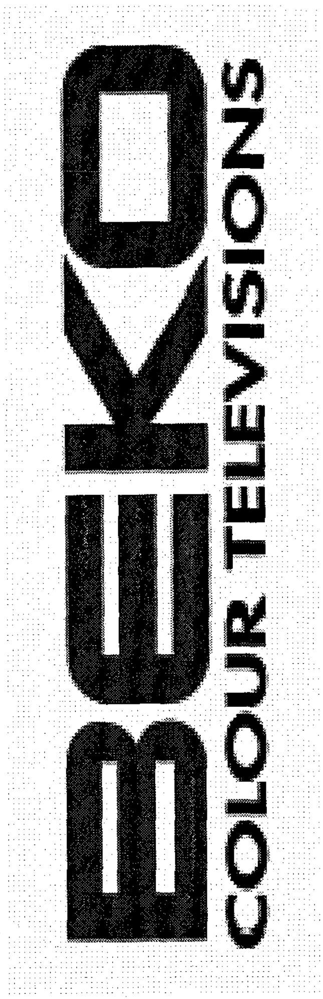
METR-M1328


BEKO
COLOUR TELEVISIONS

L6B TFT- LCD TV

SERVICE MANUAL

CONTENTS	PAGES
Safety instructions	1
Technical specifications	2
Panel Specification	3
Back appearance of TV	5
Interconnection Diagram	5
Block diagram	6
Block diagram of power supply	7
Service mode	8
Service Mode items and values	10
Data sheet of important IC's and parts	11
Recommended Part List	23
Frequency list of channels	25

SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. It is advised to insert an isolation transformer in the AC supply before servicing a hot chassis.
2. Always use the manufacturer's replacement safety components. The critical safety components marked with ⚠ on the schematics diagrams should not be by other substitutes. Other substitute may create the electrical shock , fire or other hazards. Take attention to replace the spacers with the originals. Furthermore where a short circuit has occurred , replace those components that indicate evidence of overheating.
3. After servicing , see that all the protective devices such as insulation barriers, insulation papers, shields and isolation R-C combinations are correctly installed.
4. When the receiver is not being used for a long time of period of time , unplug the power cord of the Adaptor from the AC outlet.

Color TFT LCD Module is very sensitive both electrically and physically. Users, therefore, are requested to follow the "Guidance of handling color TFT LCD Module" on the followings.

1 -Be careful not to make scratch on the polarizer.

Surface of polarizer is soft and can be physically damaged easily.Please do not touch, push or rub polarizer surface with materials over HB hardness.

2 - Keep clean the surface.

Please wear rubber glove when touch the surface of LCD screen. Please use soft and anti-static material as cleaner.

3 -Keep out of water. Water on/in the LCD may cause electrical short or corrosion. Please wipe out dry or water carefully.

4 -Prevent swift Temperature & Humidity change. Instantaneous temperature and/or humidity change can make dew or ice which cause nonconformance such as malfunction.

5 - High temperature & high humidity reduce the life-time.

LCD is not proper to be used at high temperature and high humidity. Please keep specified temperature and humidity condition.

6 - Keep out of Corrosive Gas. Corrosive gas effect the polarizer and the circuit chemically and cause defects accordingly.

7 - Electrostatic discharge can make Damage

There are electro-static sensitive components such as CMOS in LCD Module. Please earth human body when handle the LCD.In addition, please do not touch the interface connector pin with bare.

8 - Do not operate for a long time under the same pattern

Operating LCD for a long time under the same pattern can cause image persistence and can damage it. Please follow following guidance.

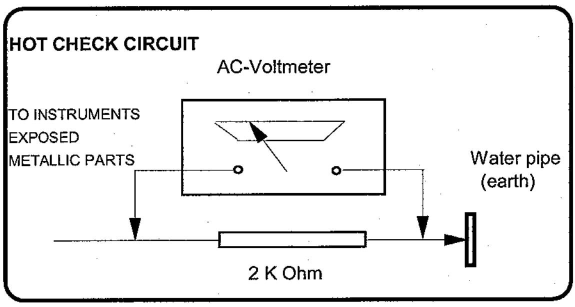
1. Turn the power off when do not use.
2. Change the pattern periodically.

LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs of the plug.
2. Turn the receiver's power switch.
3. Measure the resistance value with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the receiver. When the exposed metallic part a return path to the chassis the reading should be between 4Mohm and the 20Mohm. When the exposed metal does not have a return path to the chassis, the reading must be infinite.

LEAKAGE CURRENT HOT CHECK

1. Plug the AC cord directly in to the AC outlet. Do not use an isolation transformer for this check.
2. Connect a 2Kohm 10W resistor in series with an exposed metallic part on the receiver and an earth, such as a water pipe.
3. Use an AC voltmeter with high impedance to measure the potential across the resistor.
4. Check each exposed metallic part and check the voltage at the each point.
5. Reverse the AC plug at the outlet and repeat each of the above measurements.
6. The potential at the any point should not exceed 1.4 Vrms. In case a measurement is outside the limits specified , there is the possibility of a shock hazard , and the receiver should be repaired and rechecked before it is returned to the customer.



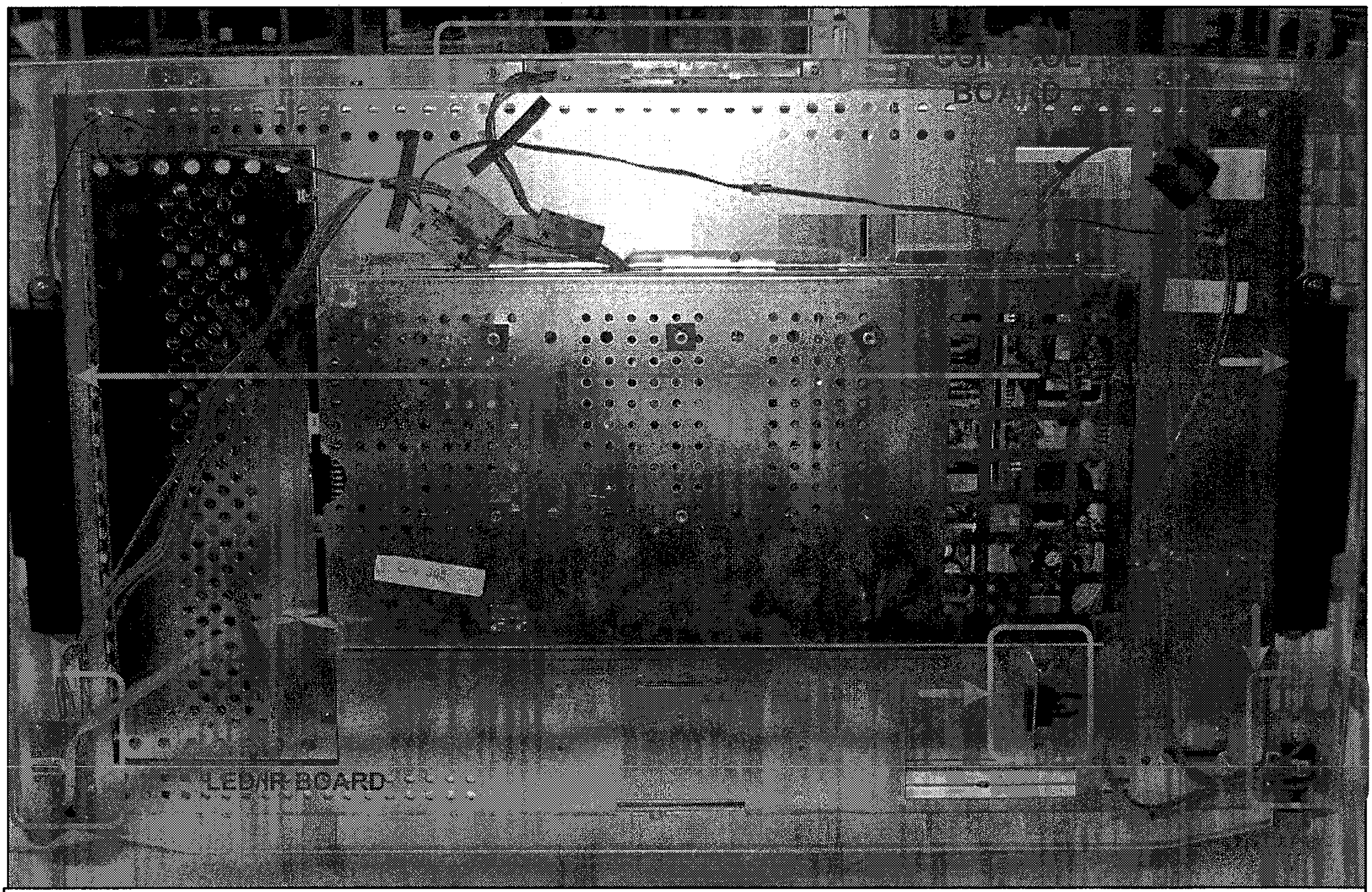
L6B TECHNICAL SPECIFICATION

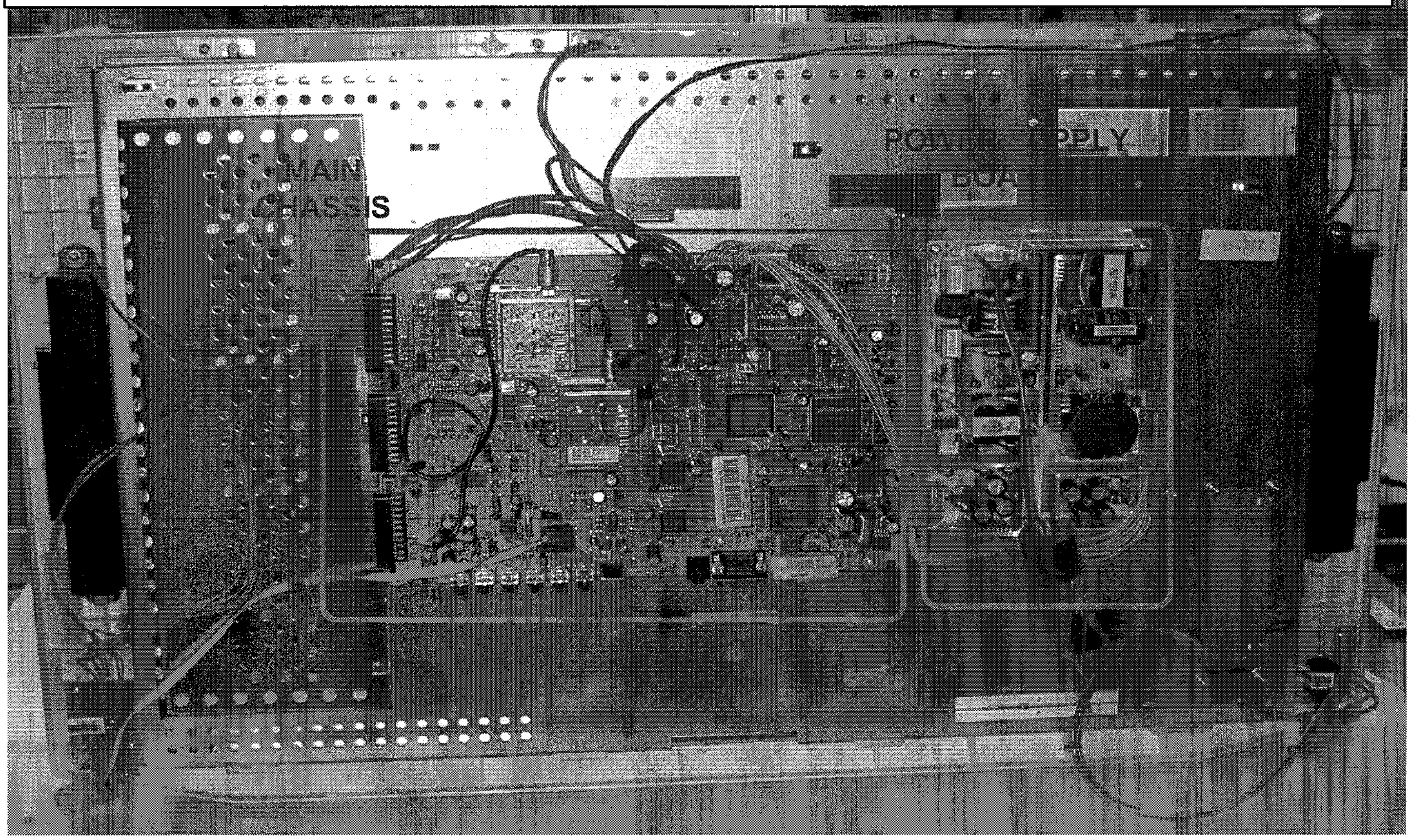
Receiving System		PAL B/G+I+D/K SECAM L/L'
Comb Filter		Adaptive 4H\2H
LTI, CTI Filters		+
DVI Receiver	**DVI 1.0 Compliant**	+
	Resolution	VGA to SXGA
	2 Pixel \ Clk Support	+
Gamma Correction		8 to 10-bit LUT
PIP\PAP\POP\PAT		+
OSD		Graphics Based 8-bit\pixel
Teletext	**Level (1.5, 2.5, Teleweb)**	Teletext 1.5
	Type (Fast\Top\Simple)	Simple, Fast, Top
	Page Memory	800p
WSS		+
VPS\PDC		+
Picture Formats (4:3, 16:9, 14:9, Panorama, LetterBox, Subtitle)	**4:3**	+
	16:9	+
	14:9	+
	Panorama	+
	Letterbox	+
	Subtitle	+
	Zoom	+
WSS (Wide Screen Signalling)		+
ATS (Automatic Tuning System)		Frequency Search
Manual Search		Channel Table Search
Number of Program Storage		+
No Ident Timer		+
Picture Freeze		+
Equalizer		+
AVL (Automatic Volume Level)		+
Sound Status Memory		+
Picture Status Memory		+
Swap		+
Child Lock		+
Program Lock		+
Picture Format Switching Tru Pin 8		+
Auto RGB Detect Tru Pin 16		+
Timer	**Off Timer (Sleep Timer)**	+
	On Timer	+
Picture Smart (User, Soft, Natural, Rich)		+
Sound Smart (User, Music, Sports, Cinema, Speech)		+
Scart2 Out Selectable		+
S-Video Input Through Scart2		+
Audio Output Power RMS in Max at 10% THD)		2x5W for 22"W, 23"W 2x10W for 26"W 2x10W for 30"W
Stereo (German A2, Nicam, BTSC)		German A2, Nicam
S-video In (DIN)	1	
AV In (3 RCA)	1	
AV Out (3 RCA)	1	
PC Audio (L, R)	1	
D-Sub 15	1	
Headphone	1	
CVBS In	4	
Y\C In	1	
DVI In	YES	
CVBS Out	4	

PANEL SPECIFICATION

Sizes	**22"**	**23"**	**26"**	**27"**	**30"**	**32"**
Manufacturer	**Samsung**	**Samsung LG-Philips Hannstar**	**Samsung LG-Philips AUO**	**Chimei**	**Chimei AUO LG-Philips**	
Interface	Single LVDS	Single LVDS	Singlel LVDS	Singel LVDS	Single LVDS	Single LVDS
Resolution	WXGA (1280x720)	WXGA (1280x768)	WXGA (1280x768)	WXGA (1280x720)	WXGA (1280x768)	WXGA (1280x768)
Brightness (cd/m2)>=	450	450	450	550	550	450
Contrast>=	500	400	400	600	600	700
Response Time (Tr+Tf) msec =<	25	25	25	25	25	23
Viewing Angle R\L\H\L>=	85/85 85/85	85/85 85/85	85/85/85/85	85/85/85/85	85/85/85/85	85/85/85/85
Adaptor İnput	15V	24V	Built-in TV	Built-in TV	Built-in TV	Built-in TV
PoweR consumptions	100W	100W	120W	120W	140W	180W
St-By Power Consumption	<4W	<4W	<4W	<4W	<4W	<4W
Input Range	100V-240V/50- 60Hz	100V-240V/50- 60Hz	100V-240V/50- 60Hz	100V-240V/50- 60Hz	100V-240V/50- 60Hz	100V-240V/50- 60Hz

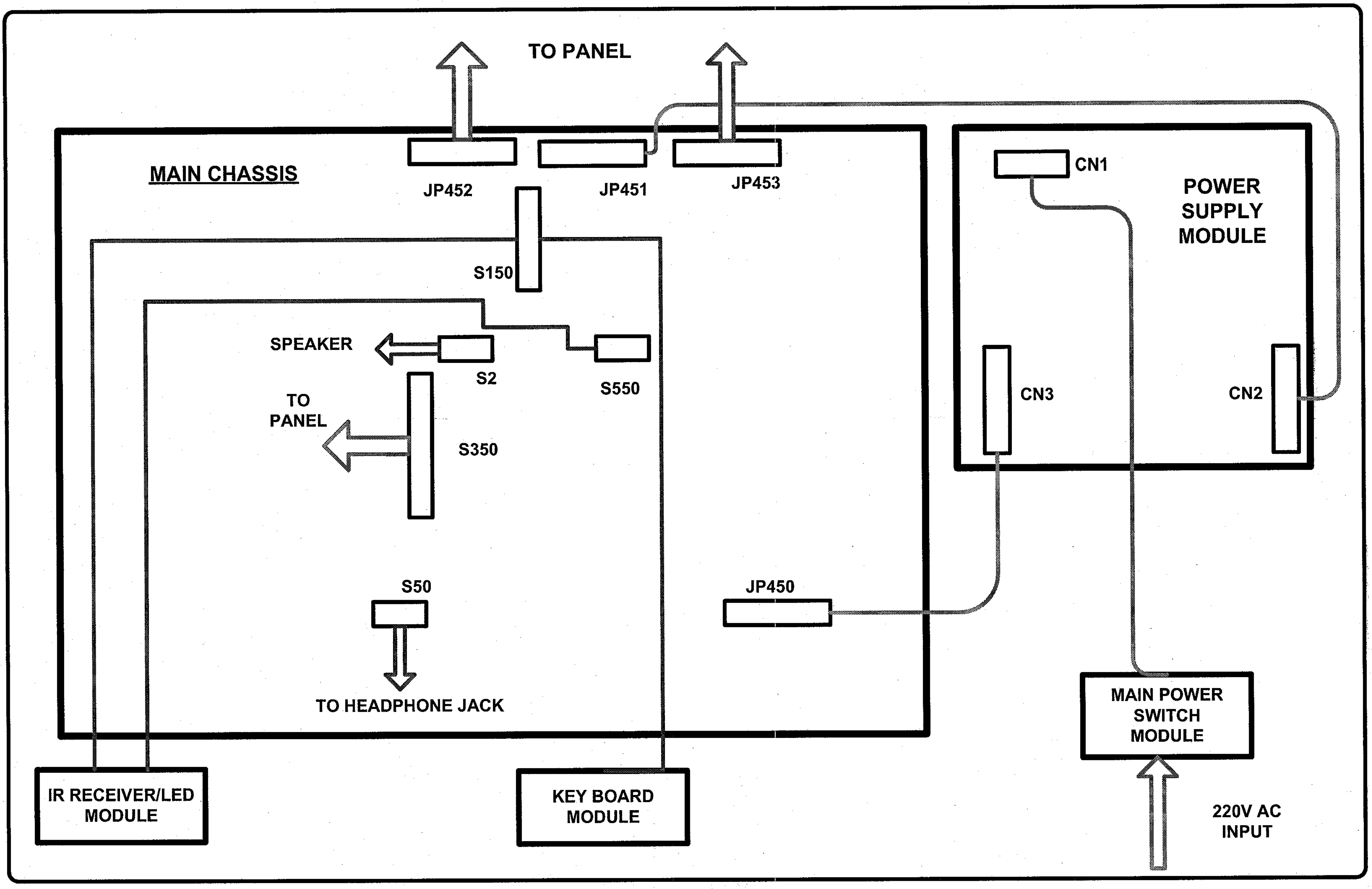
BACK SIDE APPEARANCES


CONTROL BOARD
LED/IR BOARD

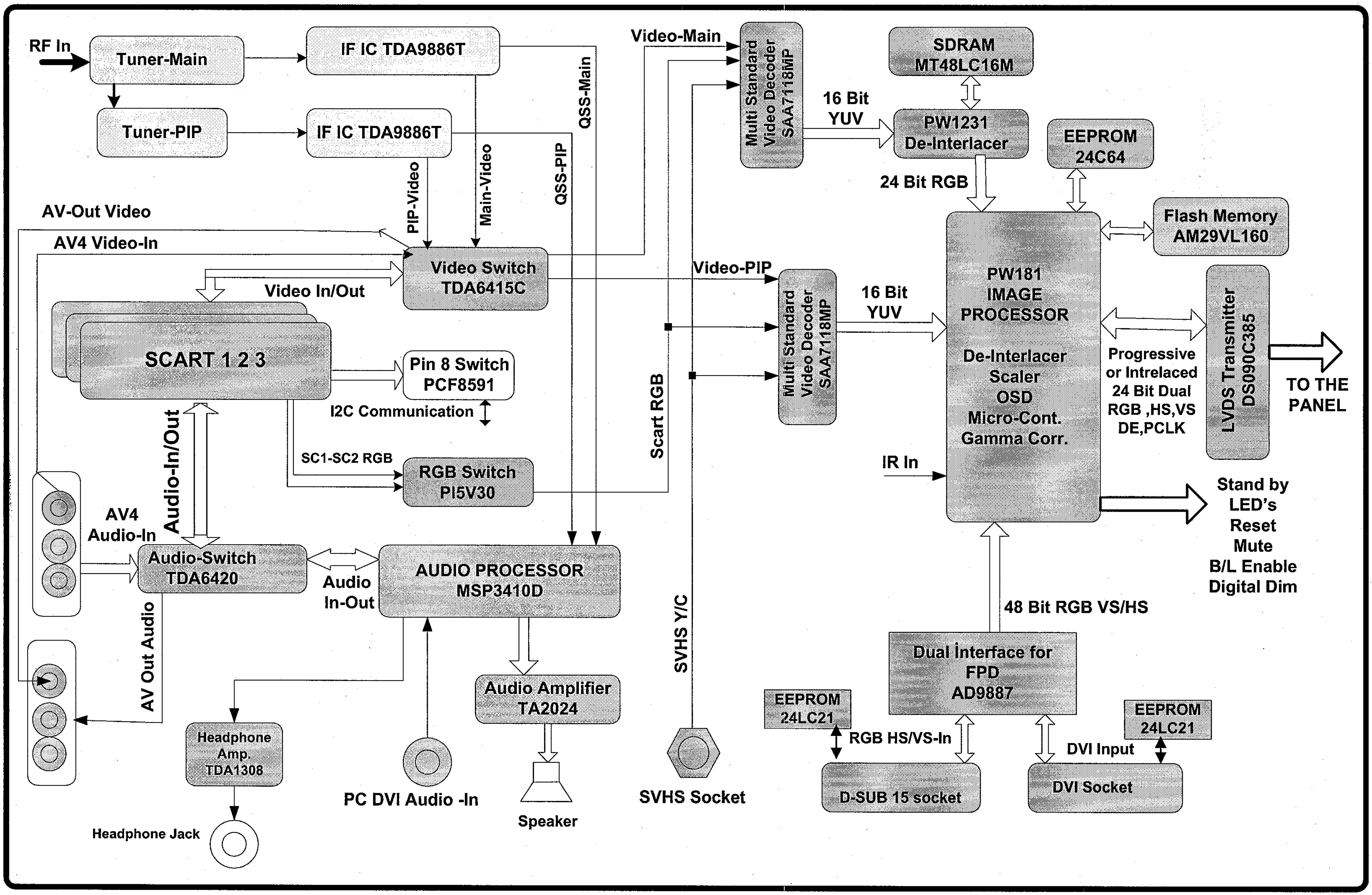

MAIN CHASSIS
POWER SUPPLY BOARD

NOTE: LOCATION AND THE SHAPE OF IR /LED BAORD, CONTROL BOARD AND MAIN SWITCH BOARD MAY CHANGE ACCORDING TO THE COSMETIC OF THE TV AND SIZE

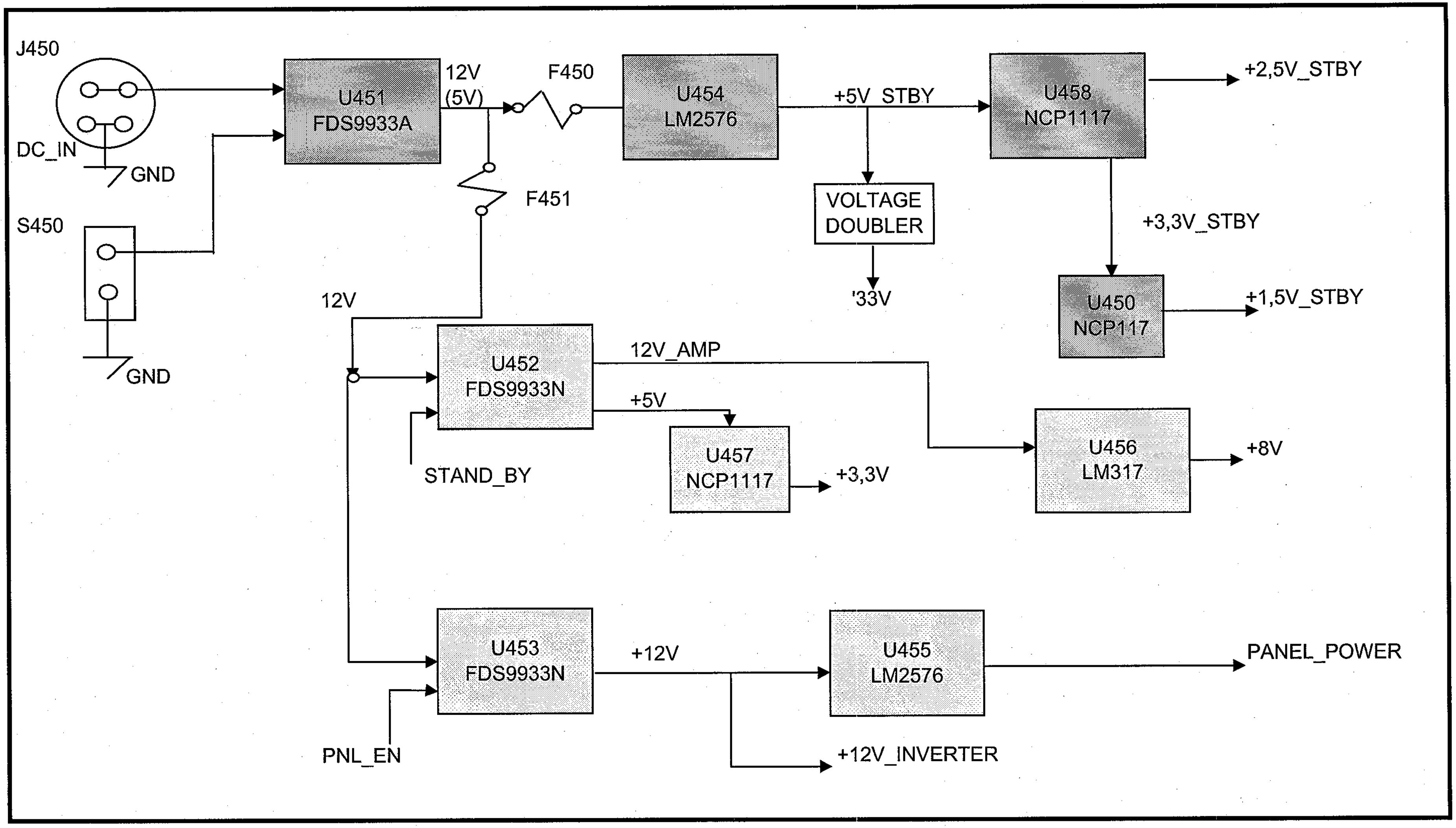
L6B CONNECTION DIAGRAM


TO PANEL
MAIN CHASSIS
JP452
JP451
JP453
CN1
POWER SUPPLY MODULE
S150
SPEAKER
S2
S550
TO PANEL
S350
CN3
CN2
S50
JP450
TO HEADPHONE JACK
MAIN POWER SWITCH MODULE
IR RECEIVER/LED MODULE
KEY BOARD MODULE
220V AC INPUT

L6B BLOCK DIAGRAM


RF In
Tuner-Main
Tuner-PIP
IF IC TDA9886T
IF IC TDA9886T
PIP-Video
Main-Video
QSS-PIP
QSS-Main
Video-Main
Multi Standard Video Decoder SAA7118MP
16 Bit YUV
SDRAM MT48LC16M
PW1231 De-Interlacer
24 Bit RGB
EEPROM 24C64
Flash Memory AM29VL160
AV-Out Video
AV4 Video-In
Video Switch TDA6415C
Video In/Out
Video-PIP
Multi Standard Video Decoder SAA7118MP
16 Bit YUV
PW181 IMAGE PROCESSOR
De-Interlacer
Scaler
OSD
Micro-Cont.
Gamma Corr.
Progressive or Intrelaced 24 Bit Dual RGB ,HS,VS DE,PCLK
LVDS Transmitter DS090C385
TO THE PANEL
SCART 1 2 3
Pin 8 Switch PCF8591
I2C Communication
Scart RGB
SC1-SC2 RGB
RGB Switch PI5V30
IR In
Stand by
LED's
Reset
Mute
B/L Enable
Digital Dim
Audio-In/Out
AV4 Audio-In
Audio-Switch TDA6420
Audio In-Out
AUDIO PROCESSOR MSP3410D
48 Bit RGB VS/HS
SVHS Y/C
AV Out Audio
Audio Amplifier TA2024
Dual Interface for FPD AD9887
EEPROM 24LC21
RGB HS/VS-In
EEPROM 24LC21
DVI Input
Headphone Amp. TDA1308
PC DVI Audio -In
Speaker
SVHS Socket
D-SUB 15 socket
DVI Socket
Headphone Jack

L6B POWER SUPPLY BLOCK DIAGRAM (MAIN CHASSIS)


J450
DC_IN
GND
S450
GND
U451
FDS9933A
12V
(5V)
F450
F451
U454
LM2576
+5V_STBY
VOLTAGE
DOUBLER
'33V
U458
NCP1117
+2,5V_STBY
+3,3V_STBY
U450
NCP117
+1,5V_STBY
12V
U452
FDS9933N
STAND_BY
12V_AMP
+5V
U457
NCP1117
+3,3V
U456
LM317
+8V
U453
FDS9933N
PNL_EN
+12V
U455
LM2576
PANEL_POWER
+12V_INVERTER

L6B SERVICE MENU

1. Activating the Service Menu

When the menu is on the screen press '9', '3', '0', '1' on the remote controller. This will activate the service menu.

2. Service Menu Structure

The service menu has three items: display, calibre and version

2.1 Display

Display item has seven options:

a- Panel
Panel option gives information about the current panel resolution. It is a read only option and can not be set.

b- Power on time
Power on time gives information about the last update time of the SW running. It is a read only option and can not be set.

c- Backlight on time
Backlight on time option reserved.

d- Scart prescale
Scart prescale option sets the prescale values for the input sounds entering the scart input of the MSP(Micronas Sound Processor). Changing this value you can adjust the level of the output sound going to loudspeakers for all the sources except the Tuners. The range is between 0 and 100.

e- nicam prescale
Nicam prescale option sets the prescale values for the Nicam standard sounds for tuner inputs. Changing this value you can adjust the level of the output sound going to loudspeakers for Nicam sounds entering the analog sound input of MSP. The range is between 0 and 100.

f- fm/am prescale
fm/am prescale option sets the prescale values for the FM/AM standard sounds for tuner inputs. Changing this value you can adjust the level of the output sound going to loudspeakers for FM/AM sounds entering the analog sound input of MSP. The range is between 0 and 100.

g- Agc(Automatic Gain Control) adjust
Agc adjust option sets the input voltage going to IF decoder AGC pin. Changing this value you can adjust this voltage for optimum Tuner performance. The range is between 0 and 31.

h- R/G/B Brightness/Contrast: These are used for color bias adjustment. The range is Between 0 and 255

2.2 Calibre

Calibre item has nine options:

a- video format

Video format option force the video format to the desired format. Selectable formats are Auto, Pal, NTSC and SECAM.

b- colorspace

Colorspace option gives the information about the video input colorspace input to PW181 IC. Do not change this value unless an error occurred in the colors displayed.

c- test pattern

This option activates the internal pattern of PW181 IC. There are 3 choices: none, vert bars, solid color. None will deactivate the internal pattern. Vert bars choice activates the bar pattern for the selected color component. Solid color activates the solid pattern with one color selected in color component and also you can change the level of the color by solid field level.

d- Color components:

This option selects the color for the internal pattern of PW181 IC. There are 4 choices: all, red, green and blue. If you choose all, you can see the white pattern and if you choose one of the other choices you can see the test pattern with the selected color.

e- solid field level

This option will adjust the level of the colors for the test pattern. The range is betwwen 1 and 64.

f- Initial ATS

This option will enable or disable the Initial setup for the TV. Setting this option to On, the TV will open from the Quick setup menu. Setting this option to Off will disable this option.

g- factory reset

Factory reset option executes a reset operation for the NVRAM. Pressing OK when this option is selected will erase the NVRAM and load default values to NVRAM.

h- dpms

This option selects the Power option for the TV. Setting this option to On the TV will switch to the last state for power on transition. Setting this to Off will disable this option and the TV will always switch to Stand-by state while power on transition.

i- osd timeout

This option sets the OSD timeout for the main menu structure. Selections are 5, 15 and 60 secs. The default is 60 sec.

2.3 Version

This item gives the information about the version of the software. Also you can see the last modified time for the GUI(graphical user interface).

L6 CHASSIS SERVICE MODE ITEMS

display menu

ITEM	TYPICAL VALUES/OPTIONS
panel	1280x768
power on time	03:39:45
back light time	03:39:45
scart prescale	25
nicam prescale	45
fm/am prescale	24
agc adjust	16
red brightness	128
red contrast	128
green brightness	128
green contrast	128
blue brightness	128
blue contrast	128

calibre menu

ITEM	TYPICAL VALUES/OPTIONS
video format	auto
color space	RGB
test pattern	none
color components	all
solid field level	33
initial ats	on
factory reset	press <ok> to reset
dpms	on
osd time out	60 sec

version

ITEM	TYPICAL VALUES/OPTIONS
Software	
	SL630T_CH1_T13 L6B 1.22 Chi30
GUI	
Project;	L6B Toshiba
Generated Date:	October 01,2004 at 22.42

SGS-THOMSON
MICROELECTRONICS

TEA6415C

BUS-CONTROLLED VIDEO MATRIX SWITCH

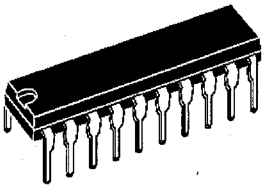
- 20MHz BANDWIDTH
- CASCADABLE WITH ANOTHER TEA6415C (INTERNAL ADDRESS CAN BE CHANGED BY PIN 7 VOLTAGE)
- 8 INPUTS (CVBS, RGB, MAC, CHROMA, ...)
- 6 OUTPUTS
- POSSIBILITY OF MAC OR CHROMA SIGNAL FOR EACH INPUT BY SWITCHING-OFF THE CLAMP WITH AN EXTERNAL RESISTOR BRIDGE
- BUS CONTROLLED
- 6.5dB GAIN BETWEEN ANY INPUT AND OUTPUT
- -55dB CROSSTALK AT 5MHz
- FULLY ESD PROTECTED

DESCRIPTION

The main function of the TEA6415C is to switch 8 video input sources on the 6 outputs.

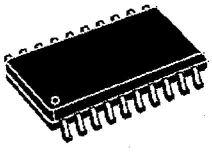
Each output can be switched to only one of the inputs whereas but any same input may be connected to several outputs.

All the switching possibilities are controlled through the I^2C bus.



DIP20
(Plastic Package)

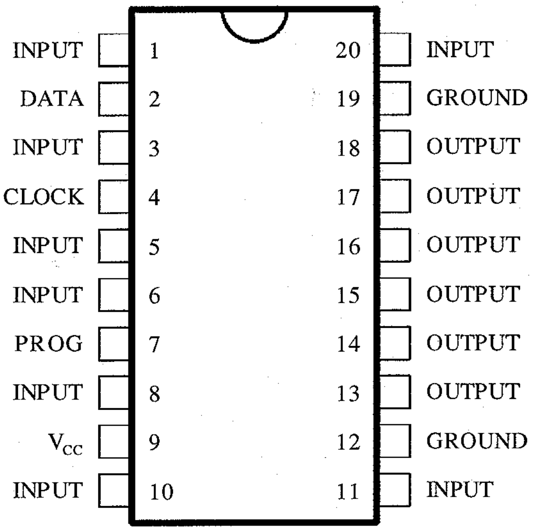
ORDER CODE : TEA6415C



SO20
(Plastic Micropackage)

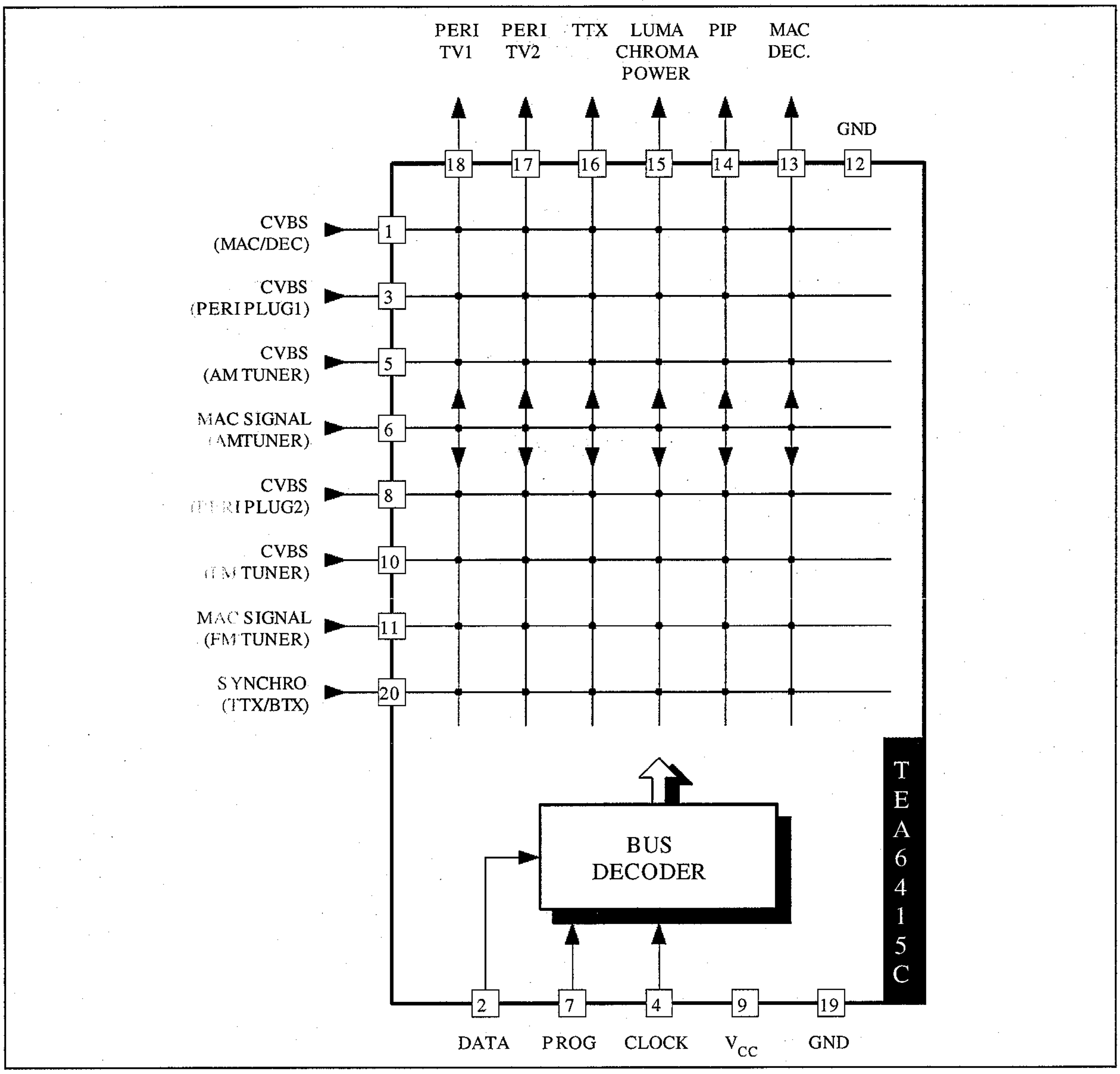
ORDER CODE : TEA6415CD

PIN CONNECTIONS


INPUT 1
DATA 2
INPUT 3
CLOCK 4
INPUT 5
INPUT 6
PROG 7
INPUT 8
V_{CC} 9
INPUT 10
20 INPUT
19 GROUND
18 OUTPUT
17 OUTPUT
16 OUTPUT
15 OUTPUT
14 OUTPUT
13 OUTPUT
12 GROUND
11 INPUT

6415C-01.EPS

BLOCK DIAGRAM


PERI TV1
PERI TV2
TTX
LUMA CHROMA POWER
PIP
MAC DEC.
GND
18
17
16
15
14
13
12
CVBS (MAC/DEC)
1
CVBS (PERI PLUG1)
3
CVBS (AM TUNER)
5
MAC SIGNAL (AM TUNER)
6
CVBS (PERI PLUG2)
8
CVBS (FM TUNER)
10
MAC SIGNAL (FM TUNER)
11
SYNCHRO (TTX/BTX)
20
BUS DECODER
TEA6415C
2
7
4
9
19
DATA
PROG
CLOCK
V_{CC}
GND

6415C-02.EPS

GENERAL DESCRIPTION

The main function of the IC is to switch 8 video input sources on 6 outputs.

Each output can be switched on only one of each input. On each input an alignment of the lowest level of the signal is made (bottom of synch. top for CVBS or black level for RGB signals).

Each nominal gain between any input and output is 6.5dB. For D2MAC or Chroma signal the alignment is switched off by forcing, with an external resistor bridge, 5 V_{DC} on the input. Each input can be used as a normal input or as a MAC or Chroma input (with external resistor bridge). All the switching possibilities are changed through the BUS.

Driving 75Ω load needs an external transistor.

It is possible to have the same input connected to several outputs.

The starting configuration upon power on (power supply : 0 to 10V) is undetermined.

In this case, 6 words of 16 bits are necessary to determine one configuration. In other case, 1 word of 16 bits is necessary to determine one configuration.

1 FEATURES

- 5 V supply voltage
- Gain controlled wide-band Vision Intermediate Frequency (VIF) amplifier, AC-coupled
- Multistandard true synchronous demodulation with active carrier regeneration: very linear demodulation, good intermodulation figures, reduced harmonics, and excellent pulse response
- Gated phase detector for L and L-accent standard
- Fully integrated VIF Voltage Controlled Oscillator (VCO), alignment-free, frequencies switchable for all negative and positive modulated standards via I^{2}C-bus
- Digital acquisition help, VIF frequencies of 33.4, 33.9, 38.0, 38.9, 45.75, and 58.75 MHz
- 4 MHz reference frequency input: signal from Phase-Locked Loop (PLL) tuning system or operating as crystal oscillator
- VIF Automatic Gain Control (AGC) detector for gain control, operating as peak sync detector for negative modulated signals and as a peak white detector for positive modulated signals
- External AGC setting via pin OP1
- Precise fully digital Automatic Frequency Control (AFC) detector with 4-bit digital-to-analog converter, AFC bits readable via I^{2}C-bus
- TakeOver Point (TOP) adjustable via I^{2}C-bus or alternatively with potentiometer
- Fully integrated sound carrier trap for 4.5, 5.5, 6.0, and 6.5 MHz, controlled by FM-PLL oscillator
- Sound IF (SIF) input for single reference Quasi Split Sound (QSS) mode, PLL controlled
- SIF-AGC for gain controlled SIF amplifier, single reference QSS mixer able to operate in high performance single reference QSS mode and in intercarrier mode, switchable via I^{2}C-bus
- AM demodulator without extra reference circuit
- Alignment-free selective FM-PLL demodulator with high linearity and low noise
- I^{2}C-bus control for all functions
- I^{2}C-bus transceiver with pin programmable Module Address (MAD)
- Four I^{2}C-bus addresses via MAD.

2 GENERAL DESCRIPTION

The TDA9885 is an alignment-free multistandard (PAL and NTSC) vision and sound IF signal PLL demodulator for negative modulation only and FM processing.

The TDA9886 is an alignment-free multistandard (PAL, SECAM and NTSC) vision and sound IF signal PLL demodulator for positive and negative modulation, including sound AM and FM processing.

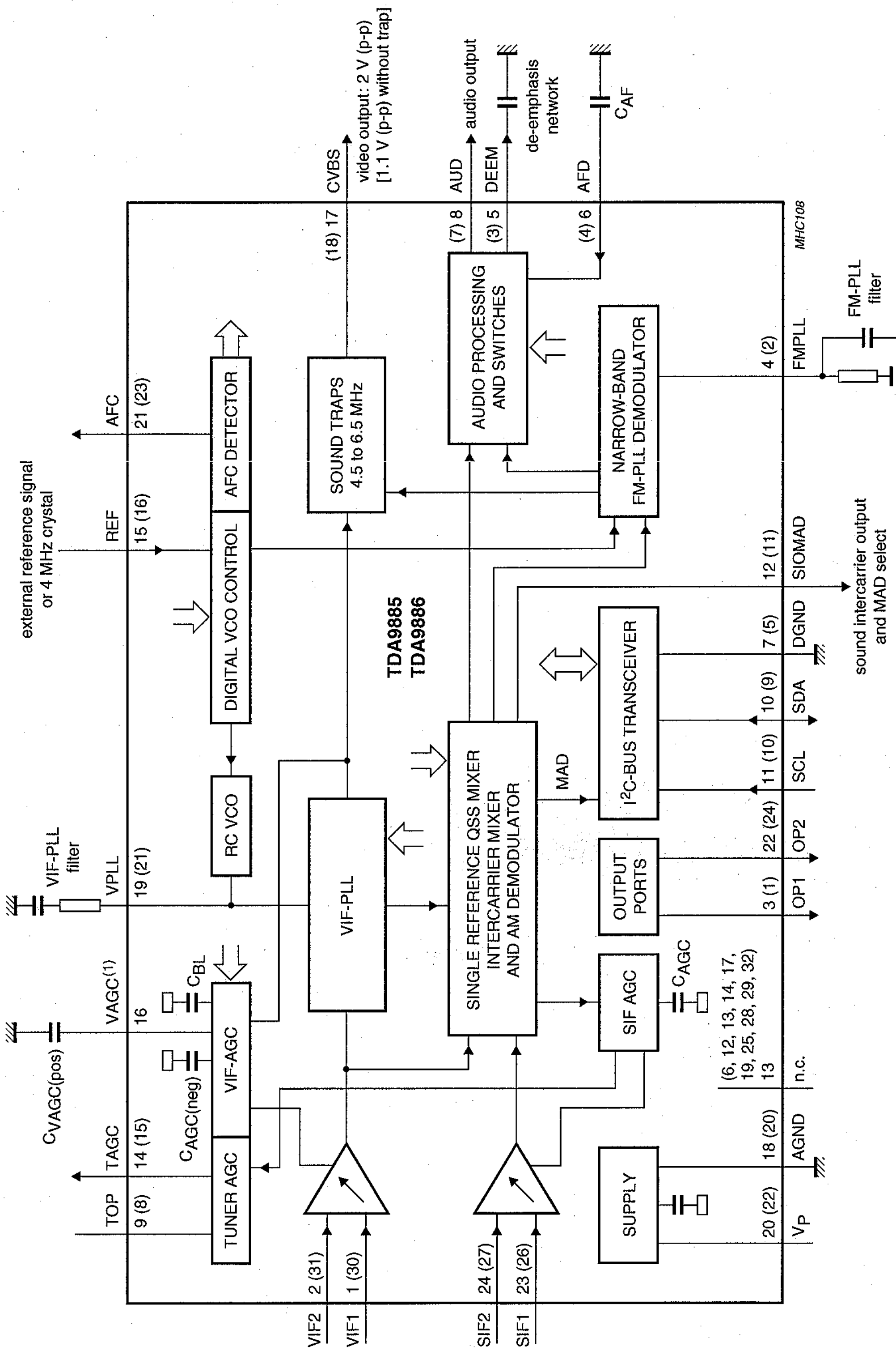
3 APPLICATIONS

- TV, VTR, PC and STB applications.

4 ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	**DESCRIPTION**	**VERSION**
TDA9885T/V3	SO24	plastic small outline package; 24 leads; body width 7.5 mm	SOT137-1
TDA9885TS/V3	SSOP24	plastic shrink small outline package; 24 leads; body width 5.3 mm	SOT340-1
TDA9885HN/V3	HVQFN32	plastic, heatsink very thin quad flat package; no leads; 32 terminals; body 5 × 5 × 0.85 mm	SOT617-1
TDA9886T/V3	SO24	plastic small outline package; 24 leads; body width 7.5 mm	SOT137-1
TDA9886TS/V3	SSOP24	plastic shrink small outline package; 24 leads; body width 5.3 mm	SOT340-1

6 BLOCK DIAGRAM


TDA9885
TDA9886
MHC108
TUNER AGC
VIF-AGC
DIGITAL VCO CONTROL
AFC DETECTOR
RC VCO
VIF-PLL
SOUND TRAPS 4.5 to 6.5 MHz
SINGLE REFERENCE QSS MIXER INTERCARRIER MIXER AND AM DEMODULATOR
AUDIO PROCESSING AND SWITCHES
NARROW-BAND FM-PLL DEMODULATOR
I2C-BUS TRANSCEIVER
OUTPUT PORTS
SIF AGC
SUPPLY
MAD
VIF2 2 (31)
VIF1 1 (30)
SIF2 24 (27)
SIF1 23 (26)
TOP 9 (8)
TAGC 14 (15)
VAGC(1) 16
VPLL 19 (21)
REF 15 (16)
AFC 21 (23)
CVBS (18) 17
AUD (7) 8
DEEM (3) 5
AFD (4) 6
FMPLL 4 (2)
SIOMAD 12 (11)
DGND 7 (5)
SDA 10 (9)
SCL 11 (10)
OP2 22 (24)
OP1 3 (1)
n.c. 13 (6, 12, 13, 14, 17, 19, 25, 28, 29, 32)
AGND 18 (20)
VP 20 (22)
CVAGC(pos)
CAGC(neg)
CBL
CAGC
CAF
VIF-PLL filter
FM-PLL filter
external reference signal or 4 MHz crystal
video output: 2 V (p-p) [1.1 V (p-p) without trap]
audio output
de-emphasis network
sound intercarrier output and MAD select

(1) Not connected for TDA9885.
Pin numbers for TDA9885HN in parenthesis.

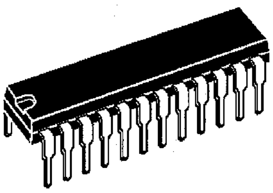
Fig.1 Block diagram.

SGS-THOMSON
MICROELECTRONICS

TEA6420

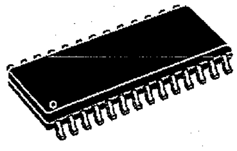
BUS-CONTROLLED AUDIO MATRIX

- 5 STEREO INPUTS
- 4 STEREO OUPUTS
- GAIN CONTROL 0/2/4/6dB/MUTE FOR EACH OUTPUT
- CASCADABLE (2 different addresses)
- SERIAL BUS CONTROLLED
- VERY LOW NOISE
- VERY LOW DISTORSION



SHRINK24
(Plastic Package)

ORDER CODE : TEA6420



SO28
(Plastic Micropackage)

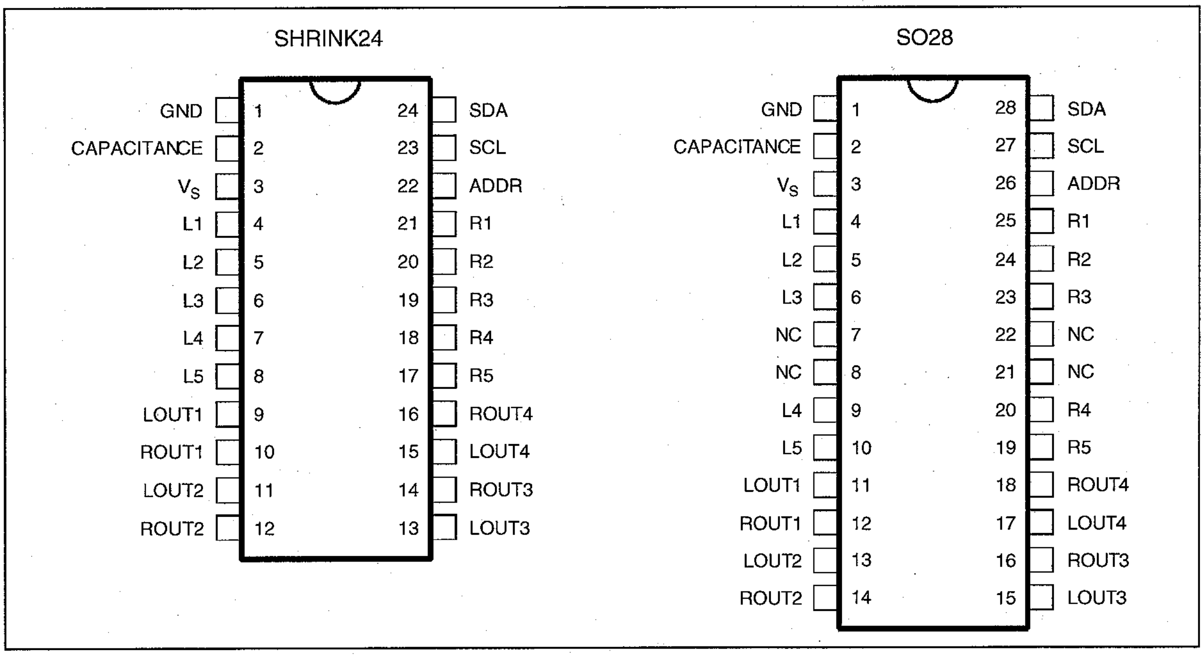
ORDER CODE : TEA6420D

DESCRIPTION

The TEA6420 switches 5 stereo audio inputs on 4 stereo outputs.

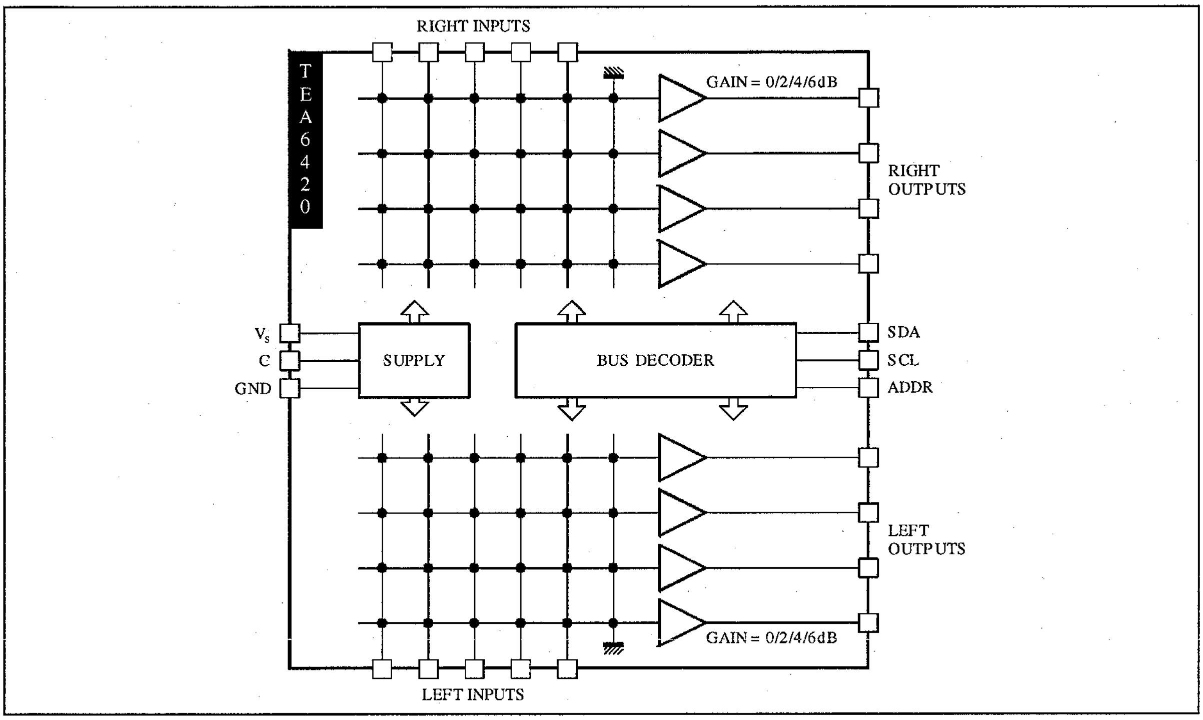
All the switching possibilities are changed through the I^{2}C bus.

PIN CONNECTIONS


SHRINK24
GND 1
CAPACITANCE 2
V_S 3
L1 4
L2 5
L3 6
L4 7
L5 8
LOUT1 9
ROUT1 10
LOUT2 11
ROUT2 12
24 SDA
23 SCL
22 ADDR
21 R1
20 R2
19 R3
18 R4
17 R5
16 ROUT4
15 LOUT4
14 ROUT3
13 LOUT3
SO28
GND 1
CAPACITANCE 2
V_S 3
L1 4
L2 5
L3 6
NC 7
NC 8
L4 9
L5 10
LOUT1 11
ROUT1 12
LOUT2 13
ROUT2 14
28 SDA
27 SCL
26 ADDR
25 R1
24 R2
23 R3
22 NC
21 NC
20 R4
19 R5
18 ROUT4
17 LOUT4
16 ROUT3
15 LOUT3

6420-01.EPS / 6420-02.EPS

BLOCK DIAGRAM


RIGHT INPUTS
TEA6420
GAIN = 0/2/4/6dB
RIGHT OUTPUTS
V_S
C
GND
SUPPLY
BUS DECODER
SDA
SCL
ADDR
LEFT OUTPUTS
GAIN = 0/2/4/6dB
LEFT INPUTS

6420-03.EPS

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage	10.2	V
T_{oper}	Operating Ambient Temperature	0, + 70	°C
T_{stg}	Storage Temperature	- 20, + 150	°C

6420-01.TBL

THERMAL DATA

Symbol	Parameter		Value	Unit
$R_{th(j\text{-}a)}$	Junction Ambient Thermal Resistance	SHRINK24 SO28	75 75	°C/W

6420-02.TBL

ELECTRICAL CHARACTERISTICS

$T_A = 25°C$, $V_S = 10V$, $R_L = 10k\Omega$, $R_G = 600\Omega$, f = 1kHz (unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
SUPPLY						
V_S	Supply Voltage		8	9	10.2	V
I_S	Supply Current			5	8	mA
SVR	Ripple Rejection	$V_{IN} = 500mV_{RMS}$, BW = 20 - 20kHz	70	80		dB
MATRIX						
V_{IN}	Input DC Level		4.5	5	5.5	V
R_I	Input Resistance		30	50	100	kΩ
C_S	Channel Separation	$V_{IN} = 2V_{RMS}$ Gain = 0dB f = 1kHz Gain = 6dB	80 70	90 82		dB dB

6420-03.TBL

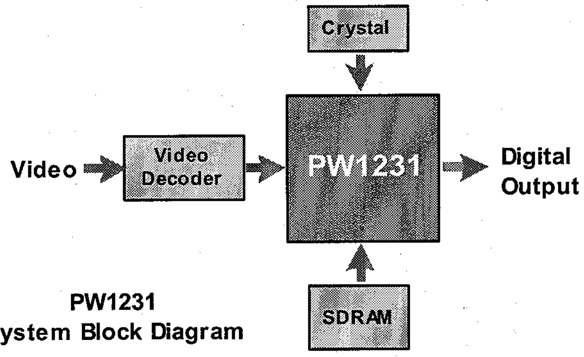
PW1231

Product Specification

General

The PW1231 is a high-quality, digital video signal processor that incorporates Pixelworks' patented deinterlacing, scaling, and video enhancement algorithms. The PW1231 accepts industry-standard video formats and resolutions, and converts the input into any desired output format.The video algorithms are highly efficient, providing excellent quality video.

The PW1231 Video SignalProcessor combines many functions into a single device, including memory controller, auto-configuration, and others. This high level of integration enables simple, flexible, cost-effective solutions featuring fewer required components.



PW1231
System Block Diagram

Features

- Built-In Memory Controller
- Motion-Adaptive Deinterlace Processor
- Intelligent Edge Deinterlacing
- Digital Color/Luminance Transient Improvement (DCTI/DLTI)
- Interlaced Video Input Options, including NTSC and PAL
- Independent horizontal and vertical scaling
- Copy Protection
- Two-Wire Serial Interface

Applications:
For use with Digital Displays

- Flat-Panel (LCD, DLP) TVs
- Rear Projection TVs
- Plasma Displays
- LCD Multimedia Monitors
- Multimedia Projectors

Device	Application	Package
PW1231 PW1231-L	Up to XGA	160-pin PQF

NOTE: "L" denotes lead (Pb) free

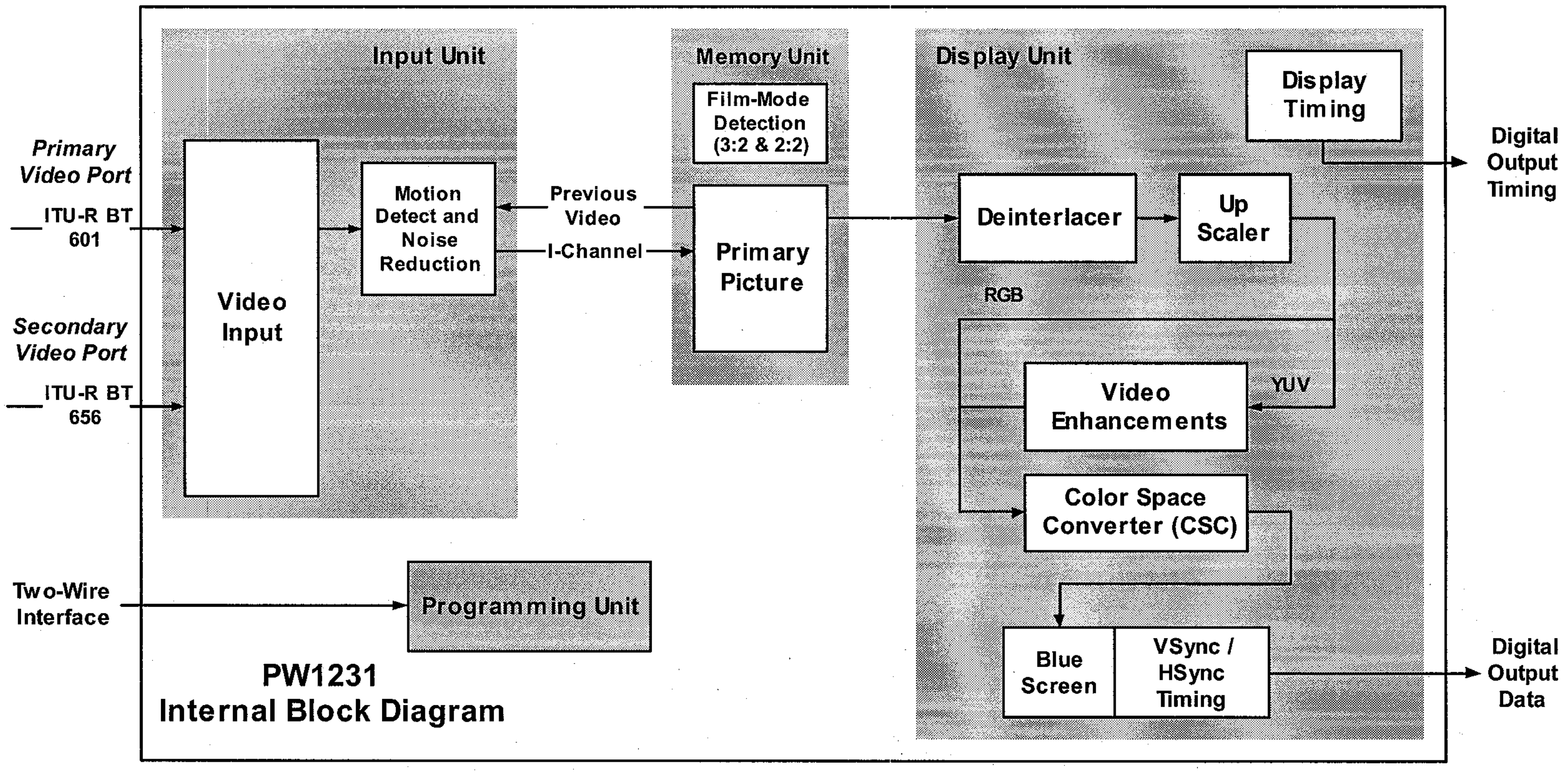

Primary
Video Port
ITU-R BT
601
Secondary
Video Port
ITU-R BT
656
Two-Wire
Interface
Input Unit
Video
Input
Motion
Detect and
Noise
Reduction
Previous
Video
I-Channel
Memory Unit
Film-Mode
Detection
(3:2 & 2:2)
Primary
Picture
Display Unit
Display
Timing
Deinterlacer
Up
Scaler
RGB
YUV
Video
Enhancements
Color Space
Converter (CSC)
Blue
Screen
VSync /
HSync
Timing
Programming Unit
PW1231
Internal Block Diagram
Digital
Output
Timing
Digital
Output
Data

Figure 1-1 Internal Block Diagram

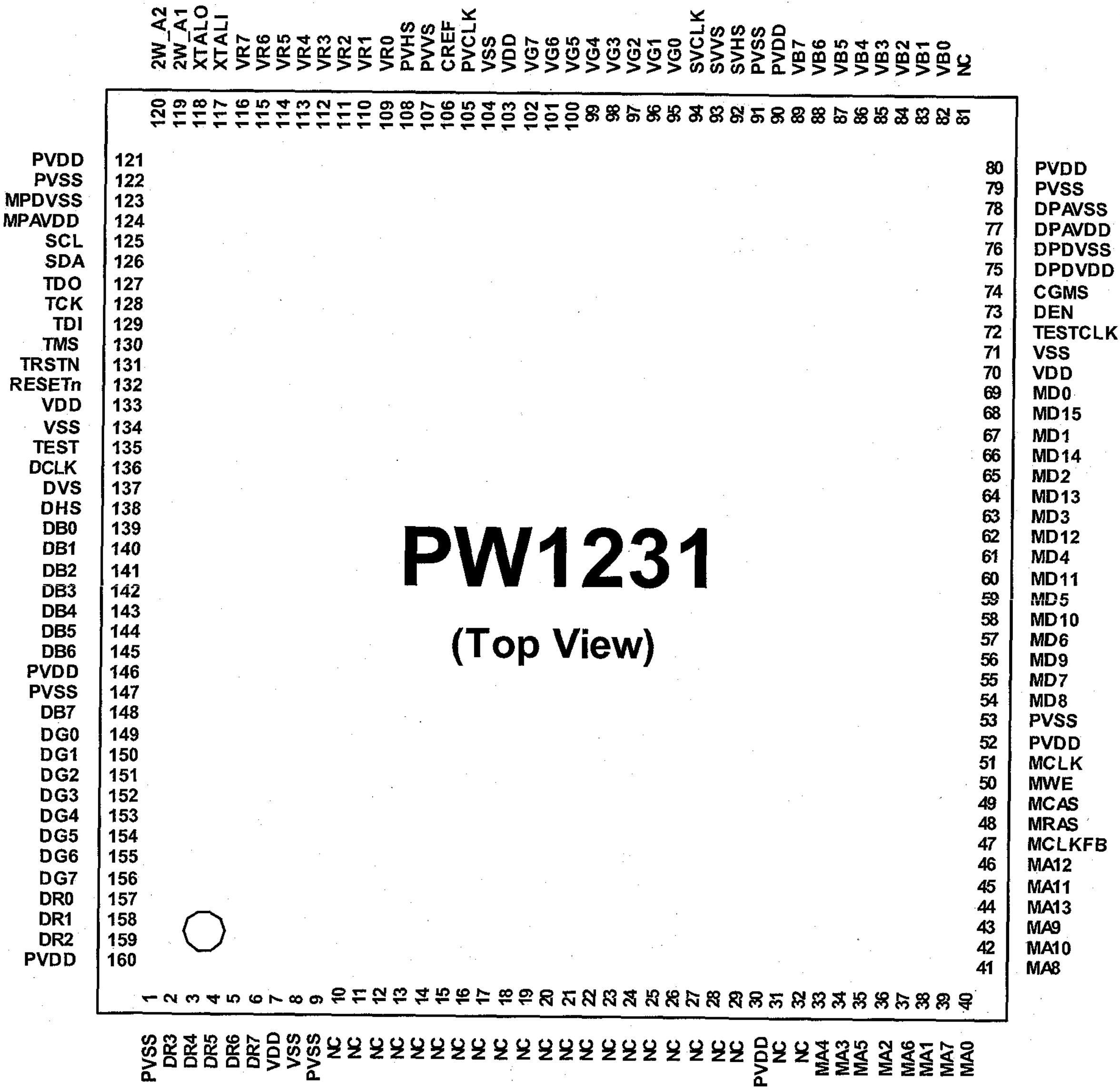

PW1231
(Top View)
120 2W_A2
119 2W_A1
118 XTALO
117 XTALI
116 VR7
115 VR6
114 VR5
113 VR4
112 VR3
111 VR2
110 VR1
109 VR0
108 PVHS
107 PVVS
106 CREF
105 PVCLK
104 VSS
103 VDD
102 VG7
101 VG6
100 VG5
99 VG4
98 VG3
97 VG2
96 VG1
95 VG0
94 SVCLK
93 SVVS
92 SVHS
91 PVSS
90 PVDD
89 VB7
88 VB6
87 VB5
86 VB4
85 VB3
84 VB2
83 VB1
82 VB0
81 NC
PVDD 121
PVSS 122
MPDVSS 123
MPAVDD 124
SCL 125
SDA 126
TDO 127
TCK 128
TDI 129
TMS 130
TRSTN 131
RESETn 132
VDD 133
VSS 134
TEST 135
DCLK 136
DVS 137
DHS 138
DB0 139
DB1 140
DB2 141
DB3 142
DB4 143
DB5 144
DB6 145
PVDD 146
PVSS 147
DB7 148
DG0 149
DG1 150
DG2 151
DG3 152
DG4 153
DG5 154
DG6 155
DG7 156
DR0 157
DR1 158
DR2 159
PVDD 160
80 PVDD
79 PVSS
78 DPAVSS
77 DPAVDD
76 DPDVSS
75 DPDVDD
74 CGMS
73 DEN
72 TESTCLK
71 VSS
70 VDD
69 MD0
68 MD15
67 MD1
66 MD14
65 MD2
64 MD13
63 MD3
62 MD12
61 MD4
60 MD11
59 MD5
58 MD10
57 MD6
56 MD9
55 MD7
54 MD8
53 PVSS
52 PVDD
51 MCLK
50 MWE
49 MCAS
48 MRAS
47 MCLKFB
46 MA12
45 MA11
44 MA13
43 MA9
42 MA10
41 MA8
1 PVSS
2 DR3
3 DR4
4 DR5
5 DR6
6 DR7
7 VDD
8 VSS
9 PVSS
10 NC
11 NC
12 NC
13 NC
14 NC
15 NC
16 NC
17 NC
18 NC
19 NC
20 NC
21 NC
22 NC
23 NC
24 NC
25 NC
26 NC
27 NC
28 NC
29 NC
30 PVDD
31 NC
32 NC
33 MA4
34 MA3
35 MA5
36 MA2
37 MA6
38 MA1
39 MA7
40 MA0

Figure 2-1 PW1231 Pin Layout

PW181

Product Specification

Monitor Solutions
pixelworks™

General Description

The PW181 ImageProcessor is a highly integrated "system-on-a-chip" that interfaces computer graphics and video inputs in virtually any format to a fixed-frequency flat panel display.

Computer and video images from NTSC/PAL to WUXGA at virtually any refresh rate can be resized to fit on a fixed-frequency target display device with any resolution up to WUXGA. Video data from 4:3 aspect ratio NTSC or PAL and 16:9 aspect ratio HDTV or SDTV is supported. Multi-region, nonlinear scaling allows these inputs to be resized optimally for the native resolution of the display.

Advanced scaling techniques are supported, such as format conversion using multiple programmable regions. Three independent image scalers coupled with frame locking circuitry and dual programmable color lookup tables create sharp images in multiple windows, without user intervention.

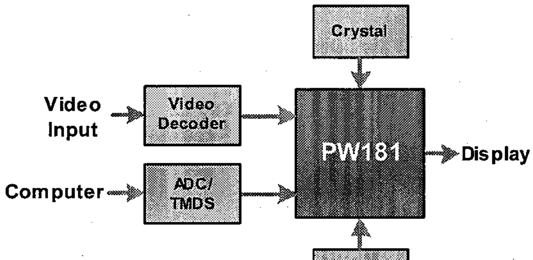
Embedded SDRAM frame buffers and memory controllers perform frame rate conversion and enhanced video processing completely on-chip. A separate memory is dedicated to storage of on-screen display images and CPU general purpose use.

Advanced video processing techniques are supported using the internal frame buffer, including motion adaptive, temporal deinterlacing with film mode detection. When used in combination with the new third-generation scaler, this advanced video processing technology delivers the highest quality video for advanced displays.

Both input ports support integrated DVI 1.0 content protection using standard DVI receivers.

A new advanced OSD Generator with more colors and larger sizes supports more demanding OSD applications, such as on-screen programming guides. When coupled with the new, faster, integrated microprocessor, this OSD Generator supports advanced OSD animation techniques.

Programmable features include the user interface, custom start-up screen, all automatic imaging features, and special screen effects.



PW181
System Block Diagram

Features

- Third-generation, two-dimensional filtering techniques
- Third-generation, advanced scaling techniques
- Second-generation Automatic Image Optimization
- Frame rate conversion
- Video processing
- On-Screen Display (OSD)
- On-chip microprocessor
- JTAG debugger and boundary scan
- Picture-in-picture (PIP)
- Multi-region, non-linear scaling
- Hardware 2-wire serial bus support

Applications

- Multimedia Displays
- Plasma Displays
- Digital Television

Device	Application	Package
PW181-10V	Up to XGA Displays	352 PBGA
PW181-20V	Up to UXGA Displays	
PW181-30V	Up to WUXGA Display	

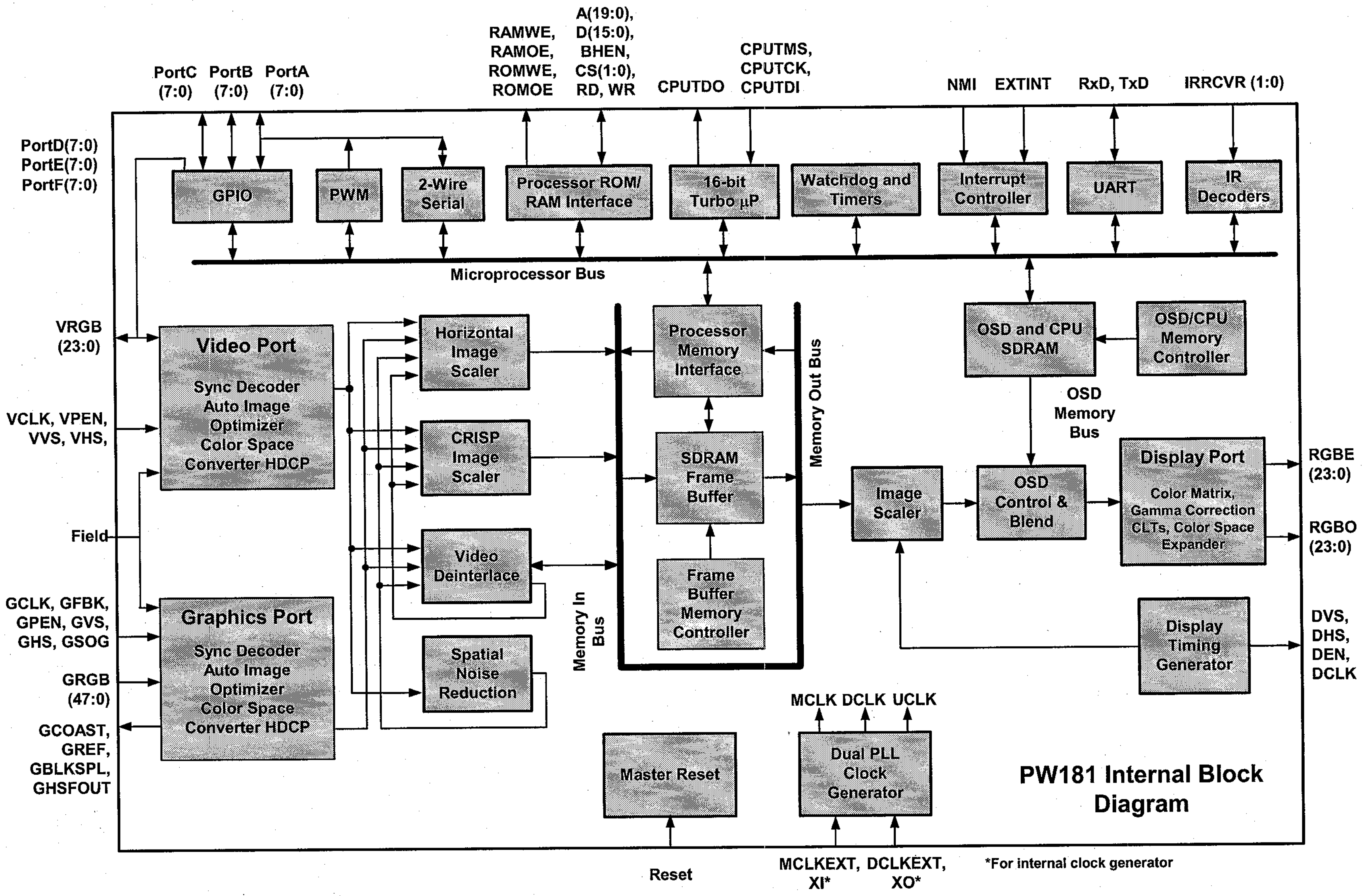

PortC (7:0)
PortB (7:0)
PortA (7:0)
RAMWE, RAMOE, ROMWE, ROMOE
A(19:0), D(15:0), BHEN, CS(1:0), RD, WR
CPUTDO
CPUTMS, CPUTCK, CPUTDI
NMI
EXTINT
RxD, TxD
IRRCVR (1:0)
PortD(7:0)
PortE(7:0)
PortF(7:0)
GPIO
PWM
2-Wire Serial
Processor ROM/ RAM Interface
16-bit Turbo µP
Watchdog and Timers
Interrupt Controller
UART
IR Decoders
Microprocessor Bus
VRGB (23:0)
Video Port
Sync Decoder
Auto Image Optimizer
Color Space Converter HDCP
Horizontal Image Scaler
CRISP Image Scaler
Video Deinterlace
Spatial Noise Reduction
Processor Memory Interface
SDRAM Frame Buffer
Frame Buffer Memory Controller
Memory Out Bus
Memory In Bus
OSD and CPU SDRAM
OSD/CPU Memory Controller
OSD Memory Bus
Image Scaler
OSD Control & Blend
Display Port
Color Matrix, Gamma Correction CLTs, Color Space Expander
RGBE (23:0)
RGBO (23:0)
Display Timing Generator
DVS, DHS, DEN, DCLK
VCLK, VPEN, VVS, VHS,
Field
GCLK, GFBK, GPEN, GVS, GHS, GSOG
GRGB (47:0)
GCOAST, GREF, GBLKSPL, GHSFOUT
Graphics Port
Sync Decoder
Auto Image Optimizer
Color Space Converter HDCP
Master Reset
Dual PLL Clock Generator
MCLK DCLK UCLK
PW181 Internal Block Diagram
Reset
MCLKEXT, XI*
DCLKEXT, XO*
*For internal clock generator

Figure 1-1 Internal Block Diagram

L6B RECOMMEDED SPARE PARTS

POSITION	PART NUMBER	PART DESCRIPTION
	056T27-CH1	LCD CHIMEI V270W1-L04 (LCD TV)
	056T30-CH1	LCD CHI-MEI V296W1-L14 (LCD TV) 30")
	056W26-LP2	LCD LG-PHILIPS LC260W01-A5K6 (LCD TV)
	L38172	CU ASSY 30" L6B (ZR1192-21)
	L57172	CU ASSY 27" L6B (ZR1192-21)
	UR3110	L6B CHASIS 27"TOS MS/NX/3/SK/PIP/PEN/DVI
	US1110	L6B CHASIS TOS 30" M/NX/3/SK/PIP/PEN/DVI
	US1172	CU ASSY 30" L6BL38 TOSHIBA (ZR1191-20)
	Y23172	CU ASSY 26L6L43 L6B VER.(ZP9191-20)
	Y22172	CU ASSY 26L6BL44 (ZG5192-20)
	Y51120	L6 CHASIS DAUGHTER BOARD
	ZG4187F	RC L6B TOSHIBA GRI/SHINE SI.P.ED CT-870
	JX1187	R/C L6B REMOTE CONTROL JAECS SIL.GRUNDIG
	ZG4301	TERMINAL BATT.BOX(+-) R/C TOSHIBA
	ZJ9172	POWER SWITCH ASSY 27/30" L6B(ZJ9192-20)
	ZJ9205F	BACK COVER 30" L38 LCD TV SILVER L6B
	ZJ9206F	SCART BACK COVER 30L38 LCD TV SILVER
	ZJ9251F	FRONT COVER G.BL/BUR.SIL P.ED 30L38 TOS.
	ZJ9805	CUSHION LEFT 30" LCD TV
	ZJ9806	CUSHION RIGHT 30" LCD TV
	ZR1107-AS	SPEAKER 10W 4R PALSTIC CASE KAB MOUNTED
	ZR1172	CU ASSY 27" L6BL57 TOSHIBA (ZR1191-20)
	ZR1204F	LENS IR/LED 30"L38 LCD TV
	ZR1205F	BACK COVER 27" L57 LCD TV SILVER L6B
	ZR1208F	KNOB POWER 27"L57 LCD TV SILVER
	ZR1212F	KNOB PROGRAM/VOL. 27LCD TOSHIBA SILVER
	ZR1251F	FRONT COVER G.BL./BUR.SIL P.ED 27L57 TOS
	ZR1255	BACK COVER DARK GRAY P.ED 27L6BL57 LCD
	ZR1258	POWER KNOB BURNISH SILVER PAINTED 27"L57
	ZR1805	CUSHION LEFT 30" LCD TV
	ZR1806	CUSHION RIGHT 27" LCD TV
	ZR1910	ADAPTOR SPS 180W 24/5 12/5 PFC 2PIN(LISH
AV/TV	010844	TACT SWITCH 2 LEG (MTSB)
CN250	031383	CON.DVI 24+5POL JRX1-DV124+5
CN601	ZJ9512-AS	CABLE PANEL.INTERFACE 30"L6B CHI 30.LU
	303407	LED ROT LTL 4221N P6 GREEN
	303447	LED 3MM RED-BLUE LIGITEK LSRFSBK2092
F450	054290	FUSE 5.0A 250V ROUND
F451	054290	FUSE 5.0A 250V ROUND
IR1	452521-01	IR RECEIVER TSOP34838 SS1A
J19	031508	KONN. RF IEC TO RCA
J53	031477	KONN. CINCH .... WHITE HOR.12,5MM 30L6
J56	031478	KONN. CINCH ..... RED HOR.12,5MM 30L6
J57	031423	HEADPHONE JACK YKB21-5103
J832	031479	KONN. CINCH ... YELLOW HOR.12,5MM 30L6
J926	031795	KONN.S-VHS
MENU	010844	TACT SWITCH 2 LEG (MTSB)
P250	031358	CONN. VGA B10B
SAW825	056708	SAW FILTER OFW K3958M
SAW826	056708	SAW FILTER OFW K3958M
SAW827	056010	SAW FILTER OFW K9656M

SAW828	056010	SAW FILTER OFW K9656M
SW1	010861	ON/OFF SWITCH BK98
TU825	Y51136-PH1	TUNER PH UV1316T/SIGH-3 SPL ASIMTRK YAT
TU826	Y11136	TUNER HOR.PHILLIPS UV1316/A I H-4
U1	453124	IC-CHIP NCP1117DT33RK TO-252 PACKAGE
U150	453195	IC PI5V330W SOIC(W)
U151	453350	IC-CHIP PCF8591 /SO16
U2	453262	IC-CHIP AD9887KS-100- DUAL IN.FACE TRAY
U250	453261	IC-CHIP 24LC21A-I/SN-CMOS18K/2.5V SE.T&R
U251	453261	IC-CHIP 24LC21A-I/SN-CMOS18K/2.5V SE.T&R
U3	453494	IC-CHIP TRIPATH TA2024 STEREO CLAS-D T&R
U350	453921	IC-CHIP DS90C385A MTD56
U351	452997	IC LM358DR2 / S08
U400	453233	IC-CHIP AM29LV160DB-90EC (TRAY)TSOP48
U401	453263	IC-CHIP AT24C64N-10SI-2. - SO8 TAPE&REEL
U402	453349	IC-CHIP TLC7733 /SO8
U450	453095	IC-CHIP NCP1117DTARK (DPAK)(T&R) TO252
U452	401372	TRN FDS9933A
U454	453294	IC-CHIP LM2576D2TR4-005V 3A TO263 STPT&R
U455	453294	IC-CHIP LM2576D2TR4-005V 3A TO263 STPT&R
U456	453428	IC-CHIP LM317MDT VAR.VOLT.REG. TO-252
U457	453124	IC-CHIP NCP1117DT33RK TO-252 PACKAGE
U458	453124	IC-CHIP NCP1117DT33RK TO-252 PACKAGE
U50	452706	IC TDA1308T/N1 SO-G8 (T&R)
U51	453352	IC-CHIP MSP3410-MQFP64
U52	453351	IC TEA6420 /SO28
U650	453346	IC-CHIP PW1231A
U750	452863	IC MT48LC4M16A2-7E SDRAM 54PIN TSOP
U825	451569	IC-CHIP TDA9886T/V3 118(SO24) T&R
U826	451569	IC-CHIP TDA9886T/V3 118(SO24) T&R
U827	453271	IC-CHIP TEA6415CDT -VIDEO-MAT-SW.T&R
U925	453124	IC-CHIP NCP1117DT33RK TO-252 PACKAGE
X941	8R9185	HP JACK 17"LCD TV
Y300	056753	CRYSTALL 24.576MHZ 20PF 30PPM
Y50	056952	CRYSTAL 18.432MHZ +-30PPM
Y550	056119	CRYSTAL 14.31818MHz CL=18PF30/30PPMHC49U
Y650	056121	CRYSTAL 10 MHz / HC49U 20PF 30PPM
Y825	056013	CRYSTAL 4 MHZ HC49-U
Y826	056013	CRYSTAL 4 MHZ HC49-U
Y925	056753	CRYSTALL 24.576MHZ 20PF 30PPM

FREQUENCY TABLE (MHz)

Channel	**Number**	**BG**	**I**	**DK**	**L/L'**
CH	1		49.75	49.75	47.75
CH	2	48.25	59.25	59.25	55.75
CH	3	55.25	77.25	77.25	60.50
CH	4	62.25	85.25	85.25	63.75
CH	5	175.25	93.25	93.25	176.00
CH	6	182.25	175.25	175.25	184.00
CH	7	189.25	183.25	183.25	192.00
CH	8	196.25	191.25	191.25	200.00
CH	9	203.25	199.25	199.25	208.00
CH	10	210.25	207.25	207.25	216.00
CH	11	217.25	215.25	215.25	189.25
CH	12	224.25	223.25	223.25	182.25
CH	13	53.75	45.75		196.25
CH	14	62.25	53.75		210.25
CH	15	82.25	61.75		
CH	16	175.25	69.75		
CH	17	183.25	95.25		
CH	18	192.25			
CH	19	201.25			
CH	20	210.25			
CH	21	471.25	471.25	471.25	471.25
CH	22	479.25	479.25	479.25	479.25
CH	23	487.25	487.25	487.25	487.25
CH	24	495.25	495.25	495.25	495.25
CH	25	503.25	503.25	503.25	503.25
CH	26	511.25	511.25	511.25	511.25
CH	27	519.25	519.25	519.25	519.25
CH	28	527.25	527.25	527.25	527.25
CH	29	535.25	535.25	535.25	535.25
CH	30	543.25	543.25	543.25	543.25
CH	31	551.25	551.25	551.25	551.25
CH	32	559.25	559.25	559.25	559.25
CH	33	567.25	567.25	567.25	567.25
CH	34	575.25	575.25	575.25	575.25
CH	35	583.25	583.25	583.25	583.25
CH	36	591.25	591.25	591.25	591.25
CH	37	599.25	599.25	599.25	599.25
CH	38	607.25	607.25	607.25	607.25
CH	39	615.25	615.25	615.25	615.25
CH	40	623.25	623.25	623.25	623.25
CH	41	631.25	631.25	631.25	631.25
CH	42	639.25	639.25	639.25	639.25
CH	43	647.25	647.25	647.25	647.25
CH	44	655.25	655.25	655.25	655.25

Channel	Number	BG	I	DK	L/L'
CH	45	663.25	663.25	663.25	663.25
CH	46	671.25	671.25	671.25	671.25
CH	47	679.25	679.25	679.25	679.25
CH	48	687.25	687.25	687.25	687.25
CH	49	695.25	695.25	695.25	695.25
CH	50	703.25	703.25	703.25	703.25
CH	51	711.25	711.25	711.25	711.25
CH	52	719.25	719.25	719.25	719.25
CH	53	727.25	727.25	727.25	727.25
CH	54	735.25	735.25	735.25	735.25
CH	55	743.25	743.25	743.25	743.25
CH	56	751.25	751.25	751.25	751.25
CH	57	759.25	759.25	759.25	759.25
CH	58	767.25	767.25	767.25	767.25
CH	59	775.25	775.25	775.25	775.25
CH	60	783.25	783.25	783.25	783.25
CH	61	791.25	791.25	791.25	791.25
CH	62	799.25	799.25	799.25	799.25
CH	63	807.25	807.25	807.25	807.25
CH	64	815.25	815.25	815.25	815.25
CH	65	823.25	823.25	823.25	823.25
CH	66	831.25	831.25	831.25	831.25
CH	67	839.25	839.25	839.25	839.25
CH	68	847.25	847.25	847.25	847.25
CH	69	855.25	855.25	855.25	855.25
CH	70		863,25		863.25
CH	71		871,25		
CH	72		879,25		
CH	73		887,25		160.00
CH	74	69.25			172.00
CH	75	76.25			220.00
CH	76	83.25			232.00
CH	77	90.25			244.00
CH	78	97.25			256.00
CH	79	59.25			268.00
CH	80	93.25			280.00
S	1	105.25	103.25	103.25	116.75
S	2	112.25	111.25	111.25	128.75
S	3	119.25	119.25	119.25	140.75
S	4	126.25	127.25	127.25	152.75
S	5	133.25	135.25	135.25	164.75
S	6	140.25	143.25	143.25	176.75
S	7	147.25	151.25	151.25	188.75
S	8	154.25	159.25	159.25	200.75
S	9	161.25	167.25	167.25	212.75
S	10	168.25	231.25	231.25	224.75
S	11	231.25	239.25	239.25	236.75
S	12	238.25	247.25	247.25	248.75
S	13	245.25	255.25	255.25	260.75
S	14	252.25	263.25	263.25	272.75

Channel	Number	BG	I	DK	L/L'
S	15	259.25	271.25	271.25	284.75
S	16	266.25	279.25	279.25	296.75
S	17	273.25	287.25	287.25	55.75
S	18	280.25	295.25	295.25	60.50
S	19	287.25	303.25	303.25	63.75
S	20	294.25			
S	21	303.25			303.25
S	22	311.25	311.25	311.25	311.25
S	23	319.25	319.25	319.25	319.25
S	24	327.25	327.25	327.25	327.25
S	25	335.25	335.25	335.25	335.25
S	26	343.25	343.25	343.25	343.25
S	27	351.25	351.25	351.25	351.25
S	28	359.25	359.25	359.25	359.25
S	29	367.25	367.25	367.25	367.25
S	30	375.25	375.25	375.25	375.25
S	31	383.25	383.25	383.25	383.25
S	32	391.25	391.25	391.25	391.25
S	33	399.25	399.25	399.25	399.25
S	34	407.25	407.25	407.25	407.25
S	35	415.25	415.25	415.25	415.25
S	36	423.25	423.25	423.25	423.25
S	37	431.25	431.25	431.25	431.25
S	38	439.25	439.25	439.25	439.25
S	39	447.25	447.25	447.25	447.25
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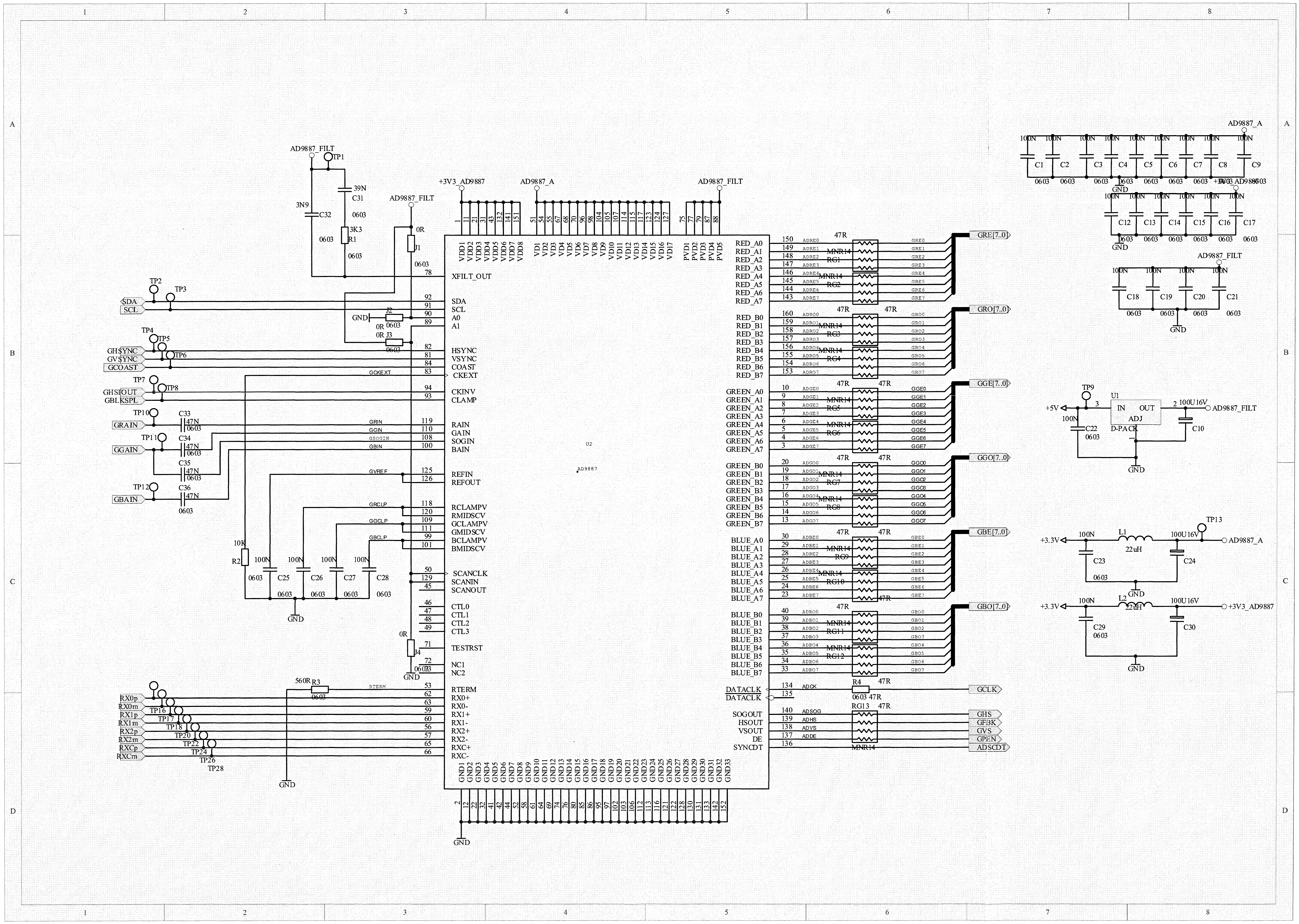
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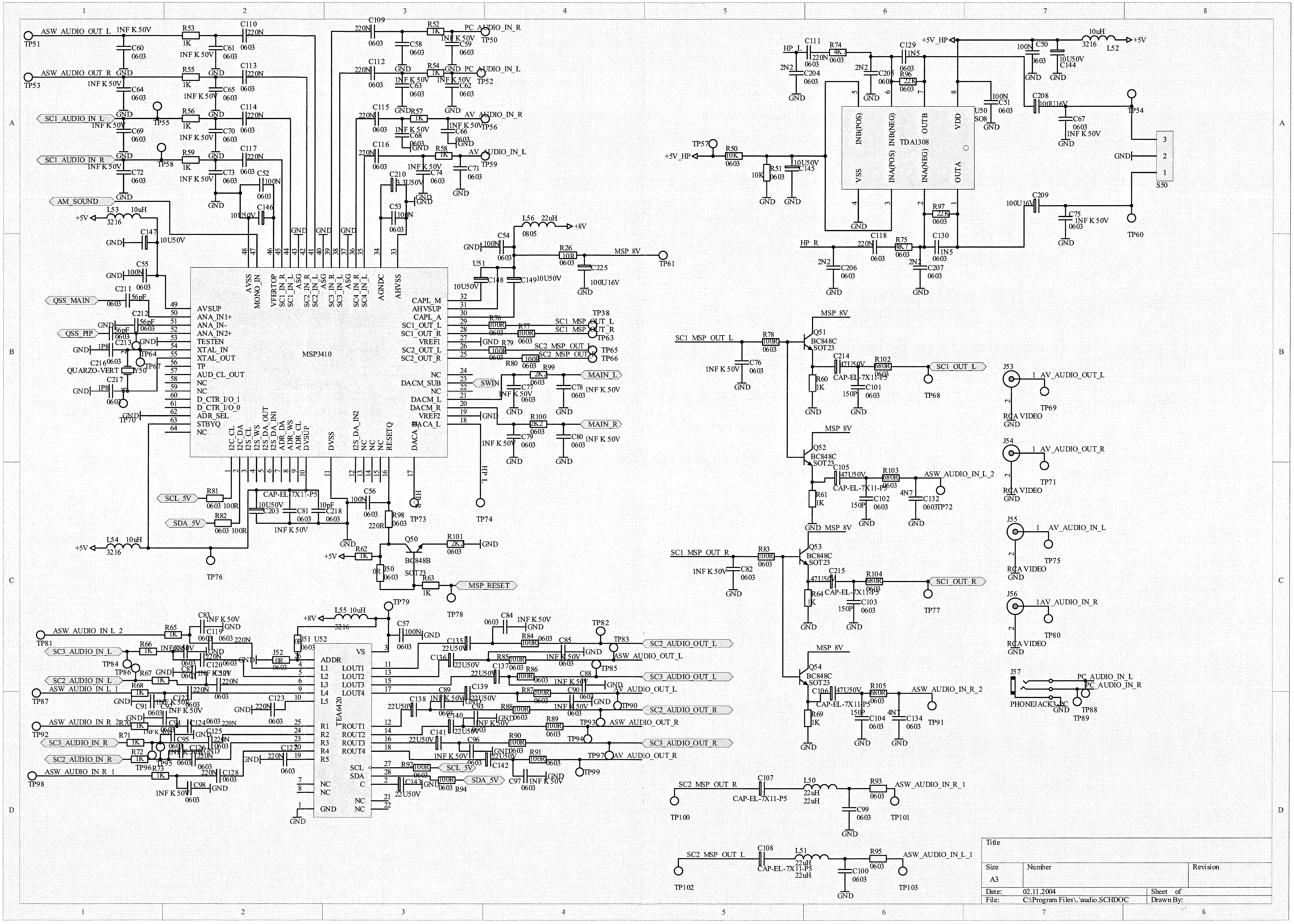
A
B
C
D
AD9887_FILT
TP1
39N
C31
3N9
C32
0603
3K3
R1
AD9887_FILT
0R
J1
0603
+3V3_AD9887
AD9887_A
AD9887_FILT
VDD1
VDD2
VDD3
VDD4
VDD5
VDD6
VDD7
VDD8
VD1
VD2
VD3
VD4
VD5
VD6
VD7
VD8
VD9
VD10
VD11
VD12
VD13
VD14
VD15
VD16
VD17
PVD1
PVD2
PVD3
PVD4
PVD5
XFILT_OUT
TP2
TP3
SDA
SCL
GND
J2
0R
J3
A0
A1
TP4
TP5
TP6
GHSYNC
GVSYNC
GCOAST
HSYNC
VSYNC
COAST
GCKEXT
CKEXT
TP7
TP8
GHSFOUT
GBLKSPL
CKINV
CLAMP
TP10
C33
47N
GRAIN
TP11
C34
GGAIN
C35
TP12
C36
GBAIN
GRIN
GGIN
GSOGIN
GBIN
RAIN
GAIN
SOGIN
BAIN
GVREF
REFIN
REFOUT
GRCLP
GGCLP
GBCLP
RCLAMPV
RMIDSCV
GCLAMPV
GMIDSCV
BCLAMPV
BMIDSCV
10K
R2
100N
C25
C26
C27
C28
SCANCLK
SCANIN
SCANOUT
CTL0
CTL1
CTL2
CTL3
0R
J4
TESTRST
NC1
NC2
U2
AD9887
560R
R3
RTERM
RX0p
RX0m
RX1p
RX1m
RX2p
RX2m
RXCp
RXCm
TP16
TP17
TP18
TP20
TP22
TP24
TP26
TP28
RX0+
RX0-
RX1+
RX1-
RX2+
RX2-
RXC+
RXC-
GND1 … GND33
RED_A0 … RED_A7
RED_B0 … RED_B7
GREEN_A0 … GREEN_A7
GREEN_B0 … GREEN_B7
BLUE_A0 … BLUE_A7
BLUE_B0 … BLUE_B7
47R
MNR14
RG1
RG2
RG3
RG4
RG5
RG6
RG7
RG8
RG9
RG10
RG11
RG12
GRE[7..0]
GRO[7..0]
GGE[7..0]
GGO[7..0]
GBE[7..0]
GBO[7..0]
DATACLK
R4
0603 47R
ADCK
GCLK
SOGOUT
HSOUT
VSOUT
DE
SYNCDT
RG13
ADSOG
ADHS
ADVS
ADDE
GHS
GFBK
GVS
GPEN
ADSCDT
AD9887_A
100N
C1
C2
C3
C4
C5
C6
C7
C8
C9
+3V3_AD9887
C12
C13
C14
C15
C16
C17
AD9887_FILT
C18
C19
C20
C21
TP9
U1
+5V
IN
OUT
ADJ
D-PACK
100U16V
C22
C10
TP13
+3.3V
L1
22uH
C23
C24
L2
C29
C30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TDA1308
TEA6420
U51
U50
U52
SO8
Q50 BC848B SOT23
Q51 BC848C SOT23
Q52 BC848C SOT23
Q53 BC848C SOT23
Q54 BC848C SOT23
ASW_AUDIO_OUT_L
ASW_AUDIO_OUT_R
SC1_AUDIO_IN_L
SC1_AUDIO_IN_R
AM_SOUND
QSS_MAIN
QSS_PIP
QUARZO-VERT
PC_AUDIO_IN_R
PC_AUDIO_IN_L
AV_AUDIO_IN_R
AV_AUDIO_IN_L
MSP_8V
SC1_MSP_OUT_L
SC1_MSP_OUT_R
SC2_MSP_OUT_L
SC2_MSP_OUT_R
MAIN_L
MAIN_R
SWIN
HP_L
HP_R
SCL_5V
SDA_5V
MSP_RESET
+5V
+8V
+5V_HP
GND
SC1_OUT_L
SC1_OUT_R
ASW_AUDIO_IN_L_2
ASW_AUDIO_IN_R_2
ASW_AUDIO_IN_L_1
ASW_AUDIO_IN_R_1
SC3_AUDIO_IN_L
SC3_AUDIO_IN_R
SC2_AUDIO_IN_L
SC2_AUDIO_IN_R
SC2_AUDIO_OUT_L
SC2_AUDIO_OUT_R
SC3_AUDIO_OUT_L
SC3_AUDIO_OUT_R
AV_AUDIO_OUT_L
AV_AUDIO_OUT_R
J53 RCA VIDEO
J54 RCA VIDEO
J55 RCA VIDEO
J56 RCA VIDEO
J57 PHONEJACK3_PC
S50
L50 22uH
L51 22uH
L52 10uH
L53 10uH
L54 10uH
L55 10uH
L56 22uH
CAP-EL-7X11-P5

Title

Size A3

Number

Revision

Date: 02.11.2004

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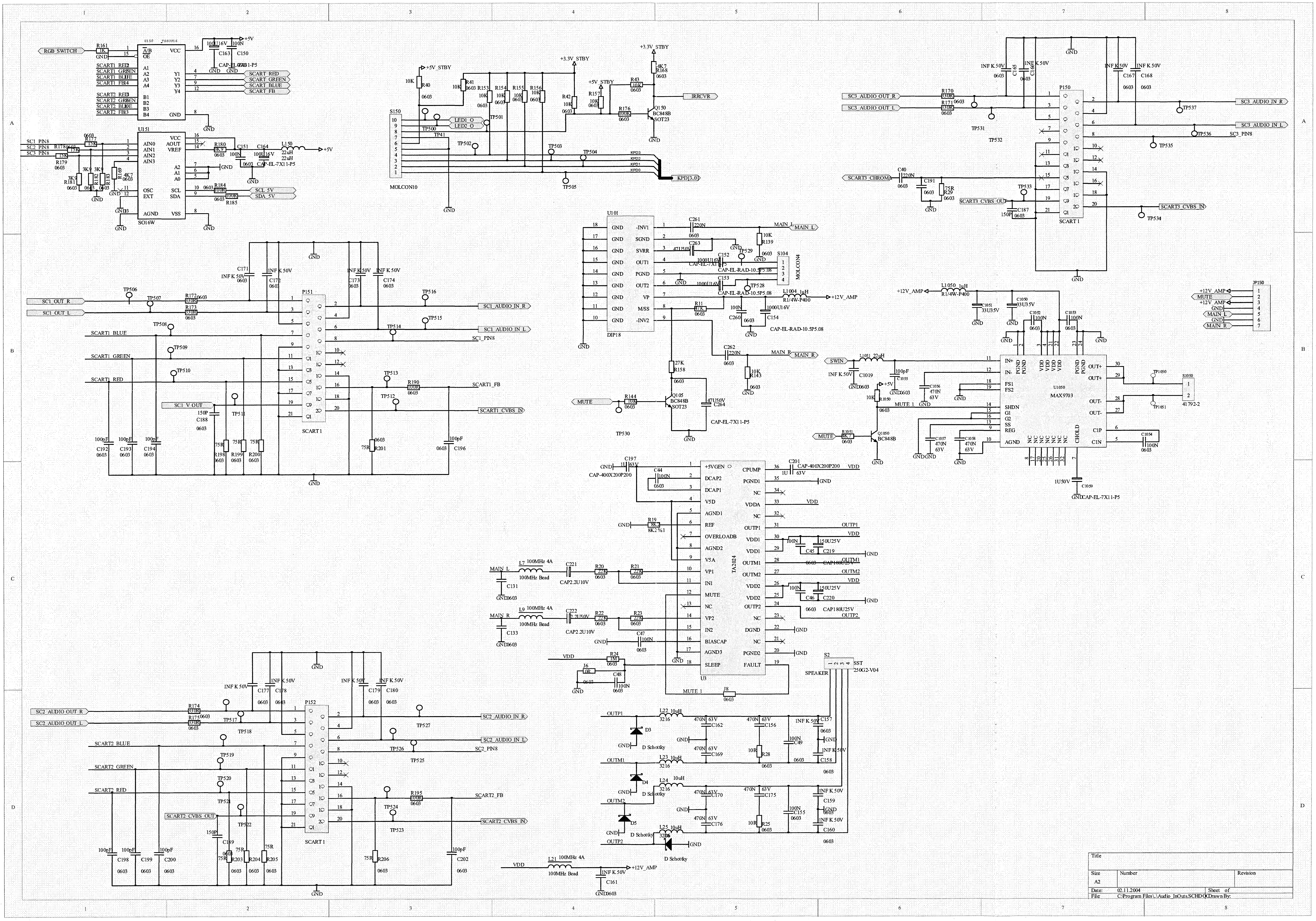
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SCART1_FB
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SCART2_GREEN
SCART2_BLUE
SCART2_FB
SCART_RED
SCART_GREEN
SCART_BLUE
SCART_FB
C163
C150
CAP-EL-7X11-P5
+5V
U151
AIN0
AIN1
AIN2
AIN3
AOUT
VREF
OSC
EXT
SCL
SDA
AGND
VSS
SO16W
SC1_PIN8
SC2_PIN8
SC3_PIN8
L150 22uH
SCL_5V
SDA_5V
+5V_STBY
+3.3V_STBY
S150
MOLCON10
LED1_O
LED2_O
TP500
TP501
TP502
TP503
TP504
TP505
KPD[3..0]
IRRCVR
Q150 BC848B SOT23
U101
DIP18
-INV1
SGND
SVRR
OUT1
PGND
OUT2
VP
M/SS
-INV2
MAIN_L
MAIN_R
S104
MOLCON4
CAP-EL-RAD-10.5P5.08
L1004 1uH R1/4W-P400
+12V_AMP
MUTE
Q105 BC848B SOT23
TP530
P151
SCART 1
SC1_OUT_R
SC1_OUT_L
SC1_AUDIO_IN_R
SC1_AUDIO_IN_L
SC1_PIN8
SCART1_BLUE
SCART1_GREEN
SCART1_RED
SC1_V_OUT
SCART1_FB
SCART1_CVBS_IN
P150
SCART 1
SC3_AUDIO_OUT_R
SC3_AUDIO_OUT_L
SC3_AUDIO_IN_R
SC3_AUDIO_IN_L
SC3_PIN8
SCART3_CHROMA
SCART3_CVBS_OUT
SCART3_CVBS_IN
L1050 1uH R1/4W-P400
JP150
+12V_AMP
MUTE
+12V_AMP
GND
MAIN_L
GND
MAIN_R
SWIN
L1051 22uH
U1050
MAX9703
IN+
IN-
FS1
FS2
SHDN
G1
G2
SS
REG
AGND
OUT+
OUT-
C1P
C1N
CHOLD
PGND
VDD
NC
S1050
41792-2
Q1050 BC848B
MUTE_1
U3
TA2024
+5VGEN
DCAP2
DCAP1
V5D
AGND1
REF
OVERLOADB
AGND2
V5A
VP1
IN1
MUTE
NC
VP2
IN2
BIASCAP
AGND3
SLEEP
CPUMP
PGND1
VDDA
OUTP1
VDD1
OUTM1
OUTM2
VDD2
OUTP2
DGND
PGND2
FAULT
CAP-400X200P200
CAP180U25V
CAP2.2U10V
L7 100MHz 4A
L9 100MHz 4A
100MHz Bead
MUTE_1
J8
S2
SST
250G2-V04
SPEAKER
OUTP1
OUTM1
OUTM2
OUTP2
L22 10uH 3216
L23 10uH 3216
L24 10uH
L25 10uH
D3
D4
D5
D6
D Schottky
L21 100MHz 4A
100MHz Bead
VDD
+12V_AMP
P152
SCART 1
SC2_AUDIO_OUT_R
SC2_AUDIO_OUT_L
SC2_AUDIO_IN_R
SC2_AUDIO_IN_L
SC2_PIN8
SCART2_BLUE
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SCART2_RED
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Size
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Number
Revision
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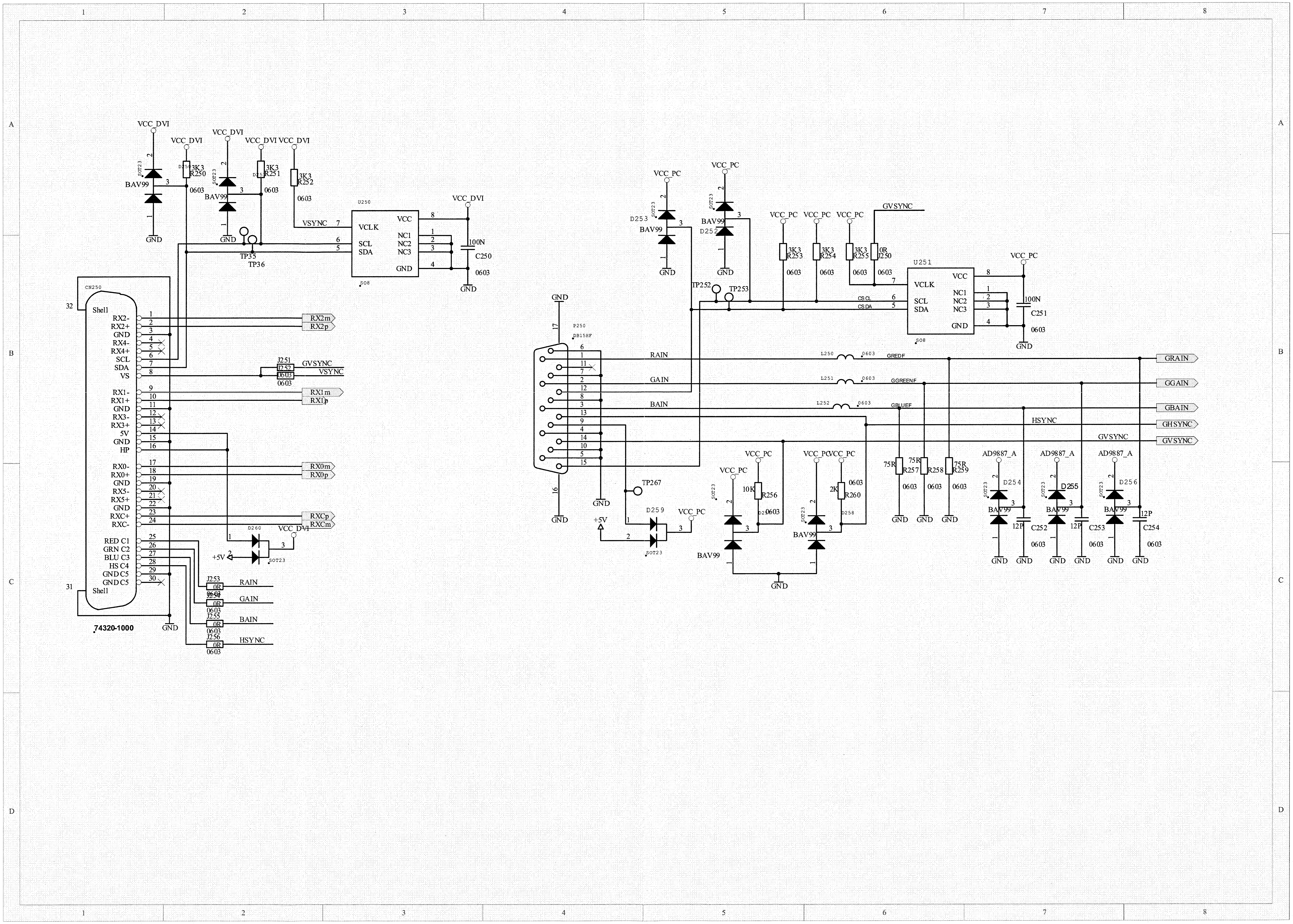

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5
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A
B
C
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VCC_DVI
VCC_DVI
VCC_DVI
VCC_DVI VCC_DVI
SOT23
BAV99
D250
3K3
R250
0603
BAV99
D251
3K3
R251
0603
3K3
R252
0603
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GND
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VCC
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NC2
NC3
GND
100N
C250
0603
GND
SO8
CN250
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Shell
RX2-
RX2+
GND
RX4-
RX4+
SCL
SDA
VS
RX1-
RX1+
GND
RX3-
RX3+
5V
GND
HP
RX0-
RX0+
GND
RX5-
RX5+
GND
RXC+
RXC-
RED C1
GRN C2
BLU C3
HS C4
GND C5
GND C5
Shell
RX2m
RX2p
RX1m
RX1p
RX0m
RX0p
RXCp
RXCm
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J252
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GVSYNC
VSYNC
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BAIN
J256
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VCC_PC
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BAV99
D252
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GND
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TP253
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VCC_PC
VCC_PC
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3K3
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3K3
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NC3
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P250
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GND
GND
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GAIN
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L251
L252
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GGAIN
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HSYNC
GVSYNC
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2K
R260
0603
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BAV99
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R257
75R
R258
75R
R259
0603
GND
GND
GND
AD9887_A
AD9887_A
AD9887_A
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D255
D256
BAV99
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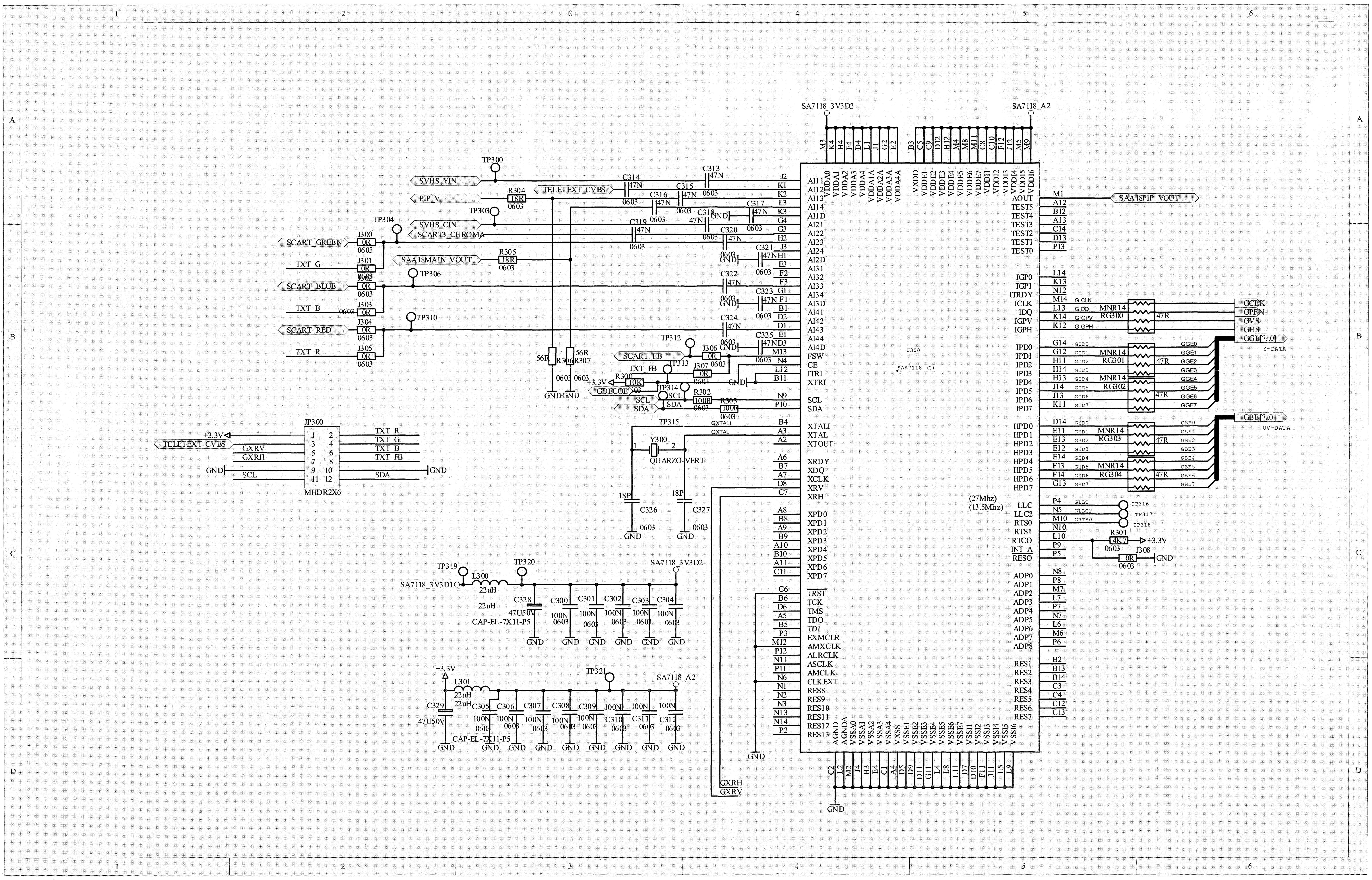
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PIP_V
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47N
C314
C315
C316
C317
C318
C319
C320
C321
C322
C323
C324
C325
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TP304
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J301
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18R
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J302
TXT_B
J303
TP310
SCART_RED
J304
TXT_R
J305
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R306
R307
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TP312
SCART_FB
J306
TXT_FB
J307
TP313
R300
10K
+3.3V
GDECOE
TP314
SCL
SDA
R302
100R
R303
TP315
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GXTAL
Y300
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C327
JP300
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GXRH
TXT_R
TXT_G
TXT_B
TXT_FB
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22uH
TP320
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47U50V
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C301
C302
C303
C304
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L301
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C305
C306
C307
C308
C309
C310
C311
C312
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AI12
AI13
AI14
AI1D
AI21
AI22
AI23
AI24
AI2D
AI31
AI32
AI33
AI34
AI3D
AI41
AI42
AI43
AI44
AI4D
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CE
ITRI
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SCL
SDA
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XTAL
XTOUT
XRDY
XDQ
XCLK
XRV
XRH
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XPD2
XPD3
XPD4
XPD5
XPD6
XPD7
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TCK
TMS
TDO
TDI
EXMCLR
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ALRCLK
ASCLK
AMCLK
CLKEXT
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RES9
RES10
RES11
RES12
RES13
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VDDA4
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VDDA2A
VDDA3A
VDDA4A
VXDD
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VDDE2
VDDE3
VDDE4
VDDE5
VDDE6
VDDE7
VDDI1
VDDI2
VDDI3
VDDI4
VDDI5
VDDI6
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AGNDA
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VSSA1
VSSA2
VSSA3
VSSA4
VXSS
VSSE1
VSSE2
VSSE3
VSSE4
VSSE5
VSSE6
VSSE7
VSSI1
VSSI2
VSSI3
VSSI4
VSSI5
VSSI6
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TEST4
TEST3
TEST2
TEST1
TEST0
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IGP1
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ICLK
IDQ
IGPV
IGPH
IPD0
IPD1
IPD2
IPD3
IPD4
IPD5
IPD6
IPD7
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HPD2
HPD3
HPD4
HPD5
HPD6
HPD7
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(13.5Mhz)
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LLC2
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RTS1
RTCO
INT_A
RESO
ADP0
ADP1
ADP2
ADP3
ADP4
ADP5
ADP6
ADP7
ADP8
RES1
RES2
RES3
RES4
RES5
RES6
RES7
SAA18PIP_VOUT
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RG301
RG302
RG303
RG304
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GPEN
GVS
GHS
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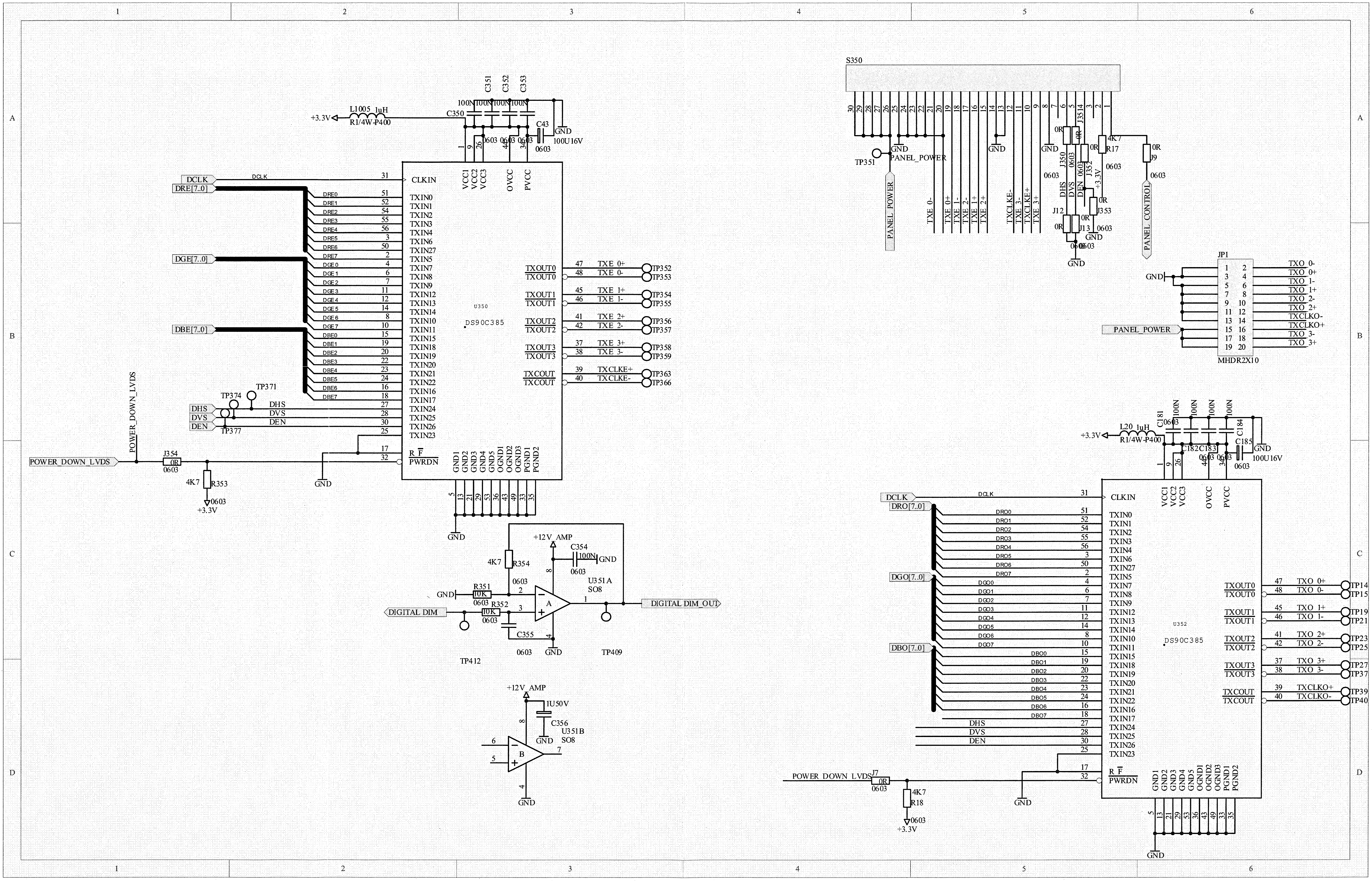

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DS90C385
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L20 1uH R1/4W-P400
+3.3V
C350
C351
C352
C353
C43
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100N
0603
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VCC3
OVCC
PVCC
GND1
GND2
GND3
GND4
GND5
OGND1
OGND2
OGND3
PGND1
PGND2
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TXOUT1
TXOUT2
TXOUT3
TXCOUT
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TXE 0-
TXE 1+
TXE 1-
TXE 2+
TXE 2-
TXE 3+
TXE 3-
TXCLKE+
TXCLKE-
TP352
TP353
TP354
TP355
TP356
TP357
TP358
TP359
TP363
TP366
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DGE[7..0]
DBE[7..0]
DRO[7..0]
DGO[7..0]
DBO[7..0]
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DVS
DEN
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TP374
TP377
POWER_DOWN_LVDS
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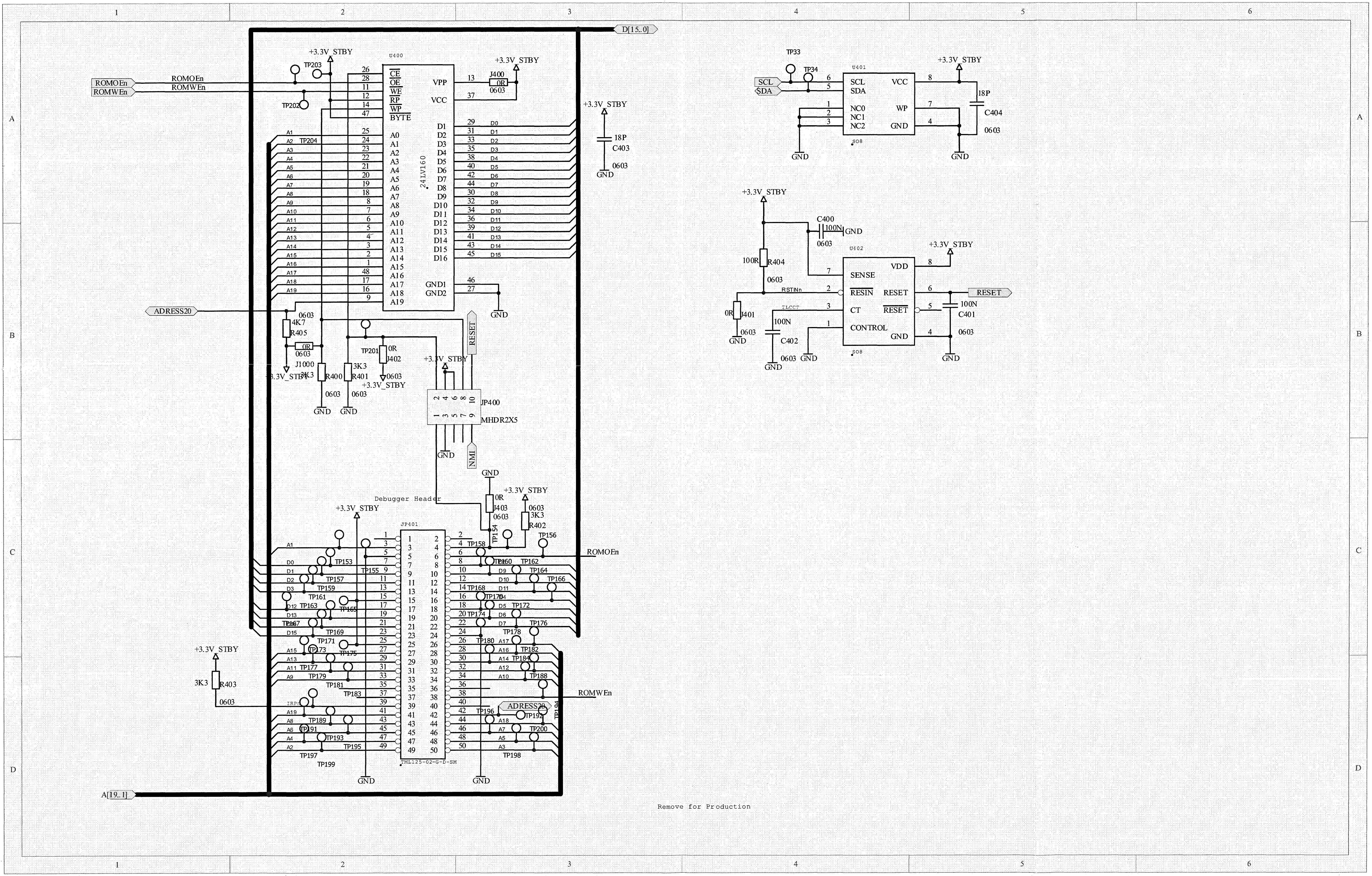
0R
R353
4K7
+12V_AMP
C354
R354
R351
10K
R352
C355
DIGITAL DIM
DIGITAL DIM_OUT
TP409
TP412
C356
1U50V
PANEL_POWER
PANEL_CONTROL
TP351
J350
J351
J352
J353
J12
J13
J9
R17
TXO 0-
TXO 0+
TXO 1-
TXO 1+
TXO 2-
TXO 2+
TXCLKO-
TXCLKO+
TXO 3-
TXO 3+
C181
C182
C183
C184
C185
TP14
TP15
TP19
TP21
TP23
TP25
TP27
TP37
TP39
TP40
J7
R18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WP
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A2
A3
A4
A5
A6
A7
A8
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A14
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A17
A18
A19
D1
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
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D14
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D16
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GND2
GND
18P
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ADRESS20
4K7
R405
J1000
3K3
R400
R401
TP201
J402
RESET
JP400
MHDR2X5
NMI
Debugger Header
JP401
J403
R402
TP154
TP156
TML125-02-G-D-SM
R403
A[19..1]
TP33
TP34
U401
SCL
SDA
NC0
NC1
NC2
C404
SO8
C400
100N
0603
100R
R404
U402
SENSE
RESIN
CT
CONTROL
VDD
RESET
RSTINn
TLCCT
J401
C402
C401
Remove for Production
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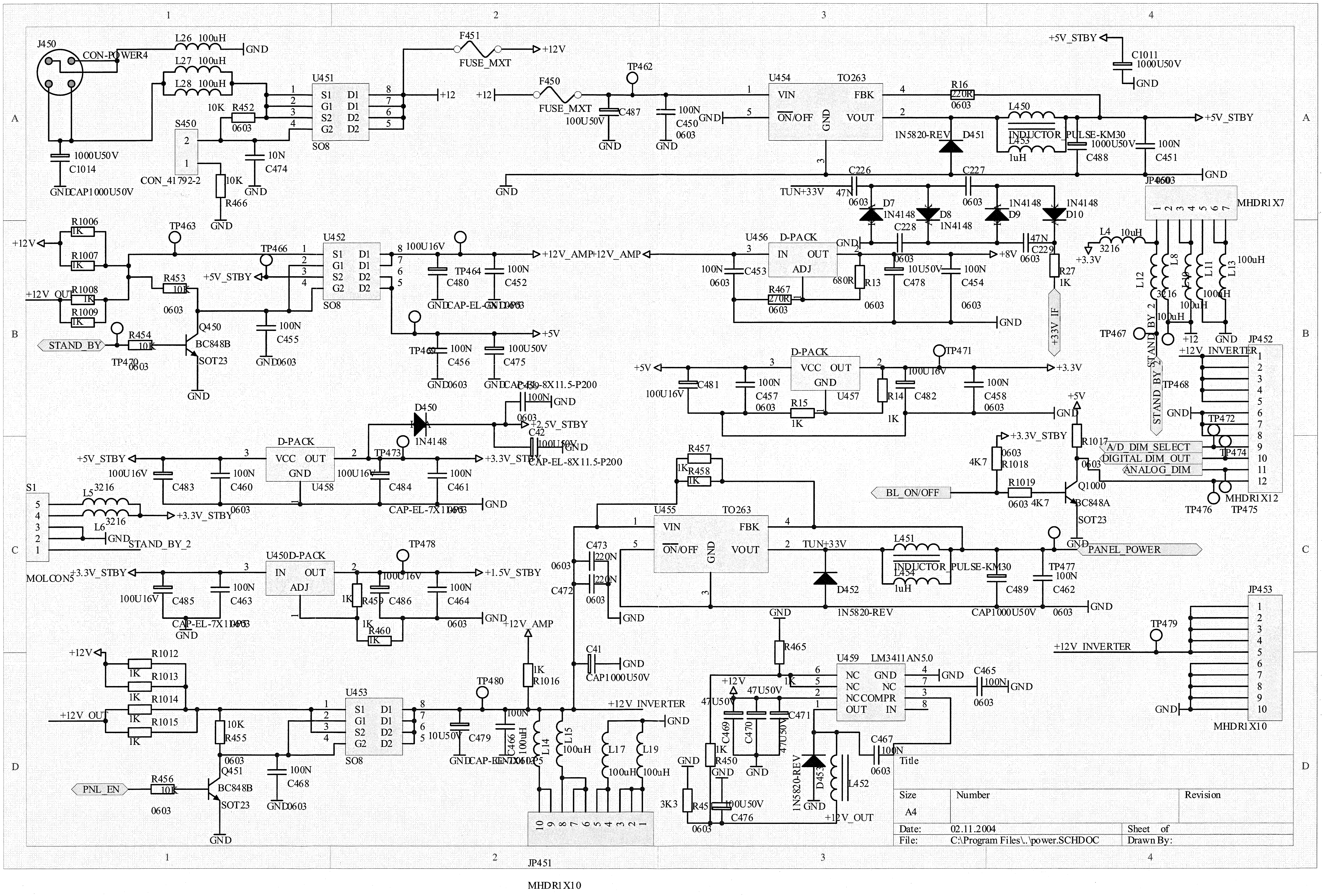
A
B
C
D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CON-POWER4
L26 100uH
L27 100uH
L28 100uH
F451
FUSE_MXT
+12V
U451
S1 G1 S2 G2 D1 D1 D2 D2
SO8
10K R452 0603
S450
CON_41792-2
10K R466
10N C474
1000U50V C1014
CAP1000U50V
+12
F450
FUSE_MXT
100U50V C487
TP462
100N C450 0603
U454 TO263
VIN FBK
ON/OFF VOUT GND
R16 220R 0603
L450
INDUCTOR_PULSE-KM30
L453 1uH
1N5820-REV D451
1000U50V C488
100N C451
+5V_STBY
C1011 1000U50V
GND
C226 C227
TUN+33V
47N 0603
D7 D8 D9 D10 1N4148
C228 C229 47N 0603
R27 1K
+33V_IF
JP450 MHDR1X7
L4 3216
L8 L10 L11 L12 L13 100uH
STAND_BY_2
+12V_INVERTER
JP452 MHDR1X12
R1006 R1007 R1008 R1009 1K
+12V_OUT
TP463 TP466
U452
R453 10K 0603
Q450 BC848B SOT23
R454 10K 0603
STAND_BY
TP470
100N C455
100U16V C480
TP464
100N C452
CAP-EL-7X11
+12V_AMP
TP469
100N C456
100U50V C475
CAP-EL-8X11.5-P200
+5V
U456 D-PACK
IN OUT ADJ
100N C453 0603
R467 270R
680R R13
10U50V C478
100N C454
+8V
U457 D-PACK
VCC OUT GND
100U16V C481
100N C457 0603
R15 1K
R14 1K
100U16V C482
100N C458 0603
+3.3V
TP471
D450 1N4148
+2.5V_STBY
C459 100N 0603
C42 100U16V
U458 D-PACK
VCC OUT GND
100U16V C483
100N C460
TP473
100U16V C484
100N C461
+3.3V_STBY
S1 MOLCON5
L5 L6 3216
U450 D-PACK
IN OUT ADJ
100U16V C485
100N C463
TP478
R459 1K
100U16V C486
100N C464
R460 1K
+1.5V_STBY
R457 1K
R458 1K
U455 TO263
C473 220N
C472 220N 0603
L451
INDUCTOR_PULSE-KM30
L454 1uH
D452 1N5820-REV
CAP1000U50V C489
TP477 100N C462
PANEL_POWER
C41 CAP1000U50V
R1017
R1018 4K7 0603
R1019 0603 4K7
Q1000 BC848A SOT23
BL_ON/OFF
A/D_DIM_SELECT
DIGITAL_DIM_OUT
ANALOG_DIM
TP467 TP468 TP472 TP474 TP475 TP476
+12V_AMP
R1016 1K
R1012 R1013 R1014 R1015 1K
R455 10K 0603
Q451 BC848B SOT23
R456 10K 0603
PNL_EN
U453 SO8
100N C468
TP480
10U50V C479
100N C466
L14 L15 L17 L19 100uH
+12V_INVERTER
JP451 MHDR1X10
R465 1K
U459 LM3411AN5.0
NC GND NC NC NC COMPR OUT IN
C465 100N 0603
47U50V C469 C470 C471
R450 1K
R451 3K3 0603
100U50V C476
D453 1N5820-REV
L452
C467 100N 0603
+12V_OUT
TP479
JP453 MHDR1X10

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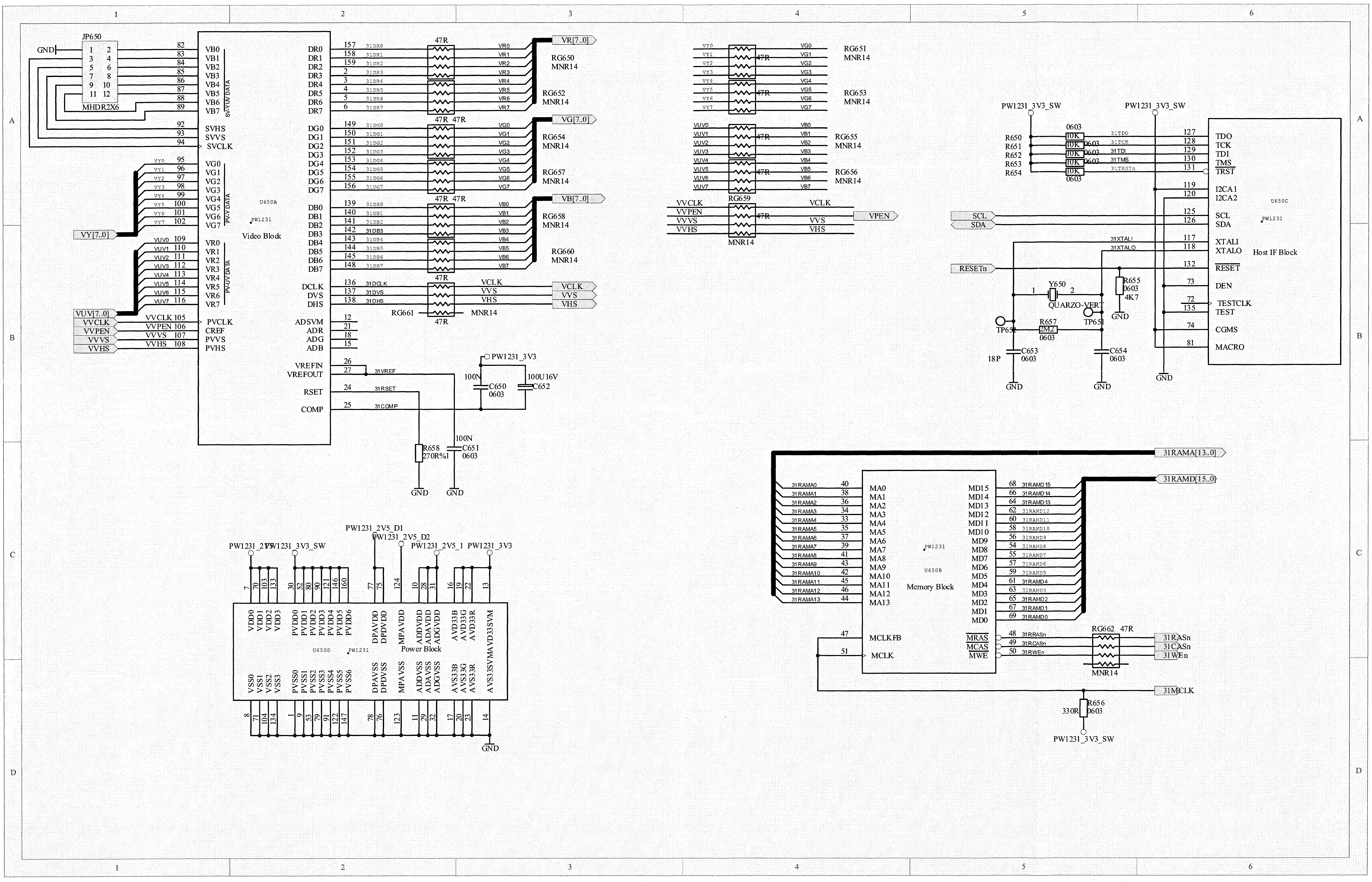
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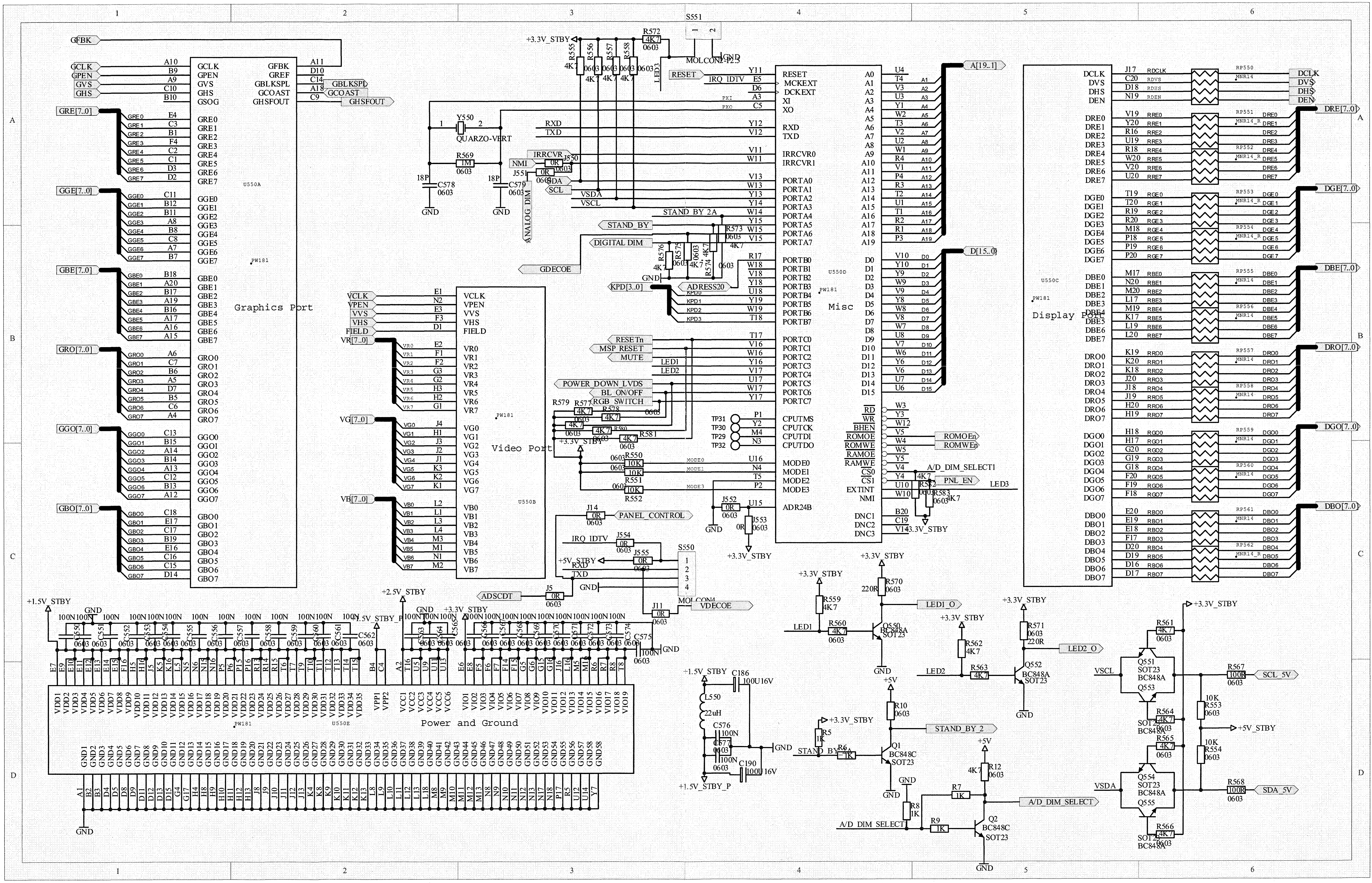
GND
MHDR2X6
1 2 3 4 5 6 7 8 9 10 11 12
VB0 VB1 VB2 VB3 VB4 VB5 VB6 VB7
SVHS SVVS SVCLK
SV-YUV DATA
VG0 VG1 VG2 VG3 VG4 VG5 VG6 VG7
PV-Y DATA
VR0 VR1 VR2 VR3 VR4 VR5 VR6 VR7
PV-UV DATA
VY[7..0]
VUV[7..0]
VVCLK
VVPEN
VVVS
VVHS
PVCLK CREF PVVS PVHS
U650A
PW1231
Video Block
DR0 DR1 DR2 DR3 DR4 DR5 DR6 DR7
DG0 DG1 DG2 DG3 DG4 DG5 DG6 DG7
DB0 DB1 DB2 DB3 DB4 DB5 DB6 DB7
DCLK DVS DHS
ADSVM ADR ADG ADB
VREFIN VREFOUT RSET COMP
47R
RG650 MNR14
RG652 MNR14
RG654 MNR14
RG657 MNR14
RG658 MNR14
RG660 MNR14
RG661 MNR14
VR[7..0]
VG[7..0]
VB[7..0]
VCLK VVS VHS
PW1231_3V3
100N C650 0603
100U16V C652
R658 270R%1
100N C651 0603
GND
RG651 MNR14
RG653 MNR14
RG655 MNR14
RG656 MNR14
RG659 MNR14
VPEN
PW1231_3V3_SW
R650 R651 R652 R653 R654
10K 0603
TDO TCK TDI TMS TRST
I2CA1 I2CA2
SCL SDA
XTALI XTALO
RESETn
RESET
DEN
TESTCLK TEST
CGMS MACRO
U650C
PW1231
Host IF Block
Y650
QUARZO-VERT
R655 0603 4K7
TP652 TP651
R657 2M2 0603
C653 0603 18P
C654 0603
31RAMA[13..0]
31RAMD[15..0]
MA0 MA1 MA2 MA3 MA4 MA5 MA6 MA7 MA8 MA9 MA10 MA11 MA12 MA13
MD15 MD14 MD13 MD12 MD11 MD10 MD9 MD8 MD7 MD6 MD5 MD4 MD3 MD2 MD1 MD0
U650B
PW1231
Memory Block
MCLKFB MCLK
MRAS MCAS MWE
RG662 47R MNR14
31RASn 31CASn 31WEn
31MCLK
R656 330R 0603
PW1231_2V5_D1
PW1231_2V5_D2
PW1231_2V5
PW1231_3V3_SW
PW1231_2V5_1
PW1231_3V3
VDD0 VDD1 VDD2 VDD3
PVDD0 PVDD1 PVDD2 PVDD3 PVDD4 PVDD5 PVDD6
DPAVDD DPDVDD MPAVDD
ADDVDD ADAVDD ADGVDD
AVD33B AVD33G AVD33R
U650D
PW1231
Power Block
VSS0 VSS1 VSS2 VSS3
PVSS0 PVSS1 PVSS2 PVSS3 PVSS4 PVSS5 PVSS6
DPAVSS DPDVSS MPAVSS
ADDVSS ADAVSS ADGVSS
AVS33B AVS33G AVS33R
AVS33SVMAVD33SVM
1 2 3 4 5 6
A B C D



1
2
3
4
5
6
A
B
C
D
Graphics Port
Video Port
Misc
Display Port
Power and Ground
U550A
U550B
U550C
U550D
U550E
PW181
GFBK
GCLK
GPEN
GVS
GHS
GRE[7..0]
GGE[7..0]
GBE[7..0]
GRO[7..0]
GGO[7..0]
GBO[7..0]
GCLK
GPEN
GVS
GHS
GSOG
GFBK
GREF
GBLKSPL
GCOAST
GHSFOUT
GBLKSPL
GCOAST
GHSFOUT
S551
R572
4K7
0603
+3.3V_STBY
R555
R556
R557
R558
4K7
LED3
MOLCON2-2.5
GND
RESET
IRQ_IDTV
Y550
QUARZO-VERT
R569
1M
C578
C579
18P
0603
GND
RXD
TXD
NMI
IRRCVR
J550
J551
0R
SDA
SCL
VSDA
VSCL
ANALOG_DIM
STAND_BY_2A
STAND_BY
DIGITAL_DIM
R573
R574
R575
R576
GDECOE
ADRESS20
KPD[3..0]
RESETn
MSP_RESET
MUTE
LED1
LED2
POWER_DOWN_LVDS
BL_ON/OFF
RGB_SWITCH
R577
R578
R579
R580
R581
R550
R551
R552
10K
J552
J553
U15
TP29
TP30
TP31
TP32
VCLK
VPEN
VVS
VHS
FIELD
VR[7..0]
VG[7..0]
VB[7..0]
RESET
MCKEXT
DCKEXT
XI
XO
IRRCVR0
IRRCVR1
PORTA0
PORTA1
PORTA2
PORTA3
PORTA4
PORTA5
PORTA6
PORTA7
PORTB0
PORTB1
PORTB2
PORTB3
PORTB4
PORTB5
PORTB6
PORTB7
PORTC0
PORTC1
PORTC2
PORTC3
PORTC4
PORTC5
PORTC6
PORTC7
CPUTMS
CPUTCK
CPUTDI
CPUTDO
MODE0
MODE1
MODE2
MODE3
ADR24B
A[19..1]
D[15..0]
RD
WR
BHEN
ROMOE
ROMWE
RAMOE
RAMWE
CS0
CS1
EXTINT
NMI
DNC1
DNC2
DNC3
ROMOEn
ROMWEn
A/D_DIM_SELECT1
PNL_EN
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R582
R583
J14
PANEL_CONTROL
J554
J555
S550
+5V_STBY
ADSCDT
J5
J11
VDECOE
MOLCON4
DCLK
DVS
DHS
DEN
DRE[7..0]
DGE[7..0]
DBE[7..0]
DRO[7..0]
DGO[7..0]
DBO[7..0]
RP550
RP551
RP552
RP553
RP554
RP555
RP556
RP557
RP558
RP559
RP560
RP561
RP562
MNR14
MNR14_R
+1.5V_STBY
+1.5V_STBY_P
+2.5V_STBY
+3.3V_STBY
100N
C550
C551
C552
C553
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C566
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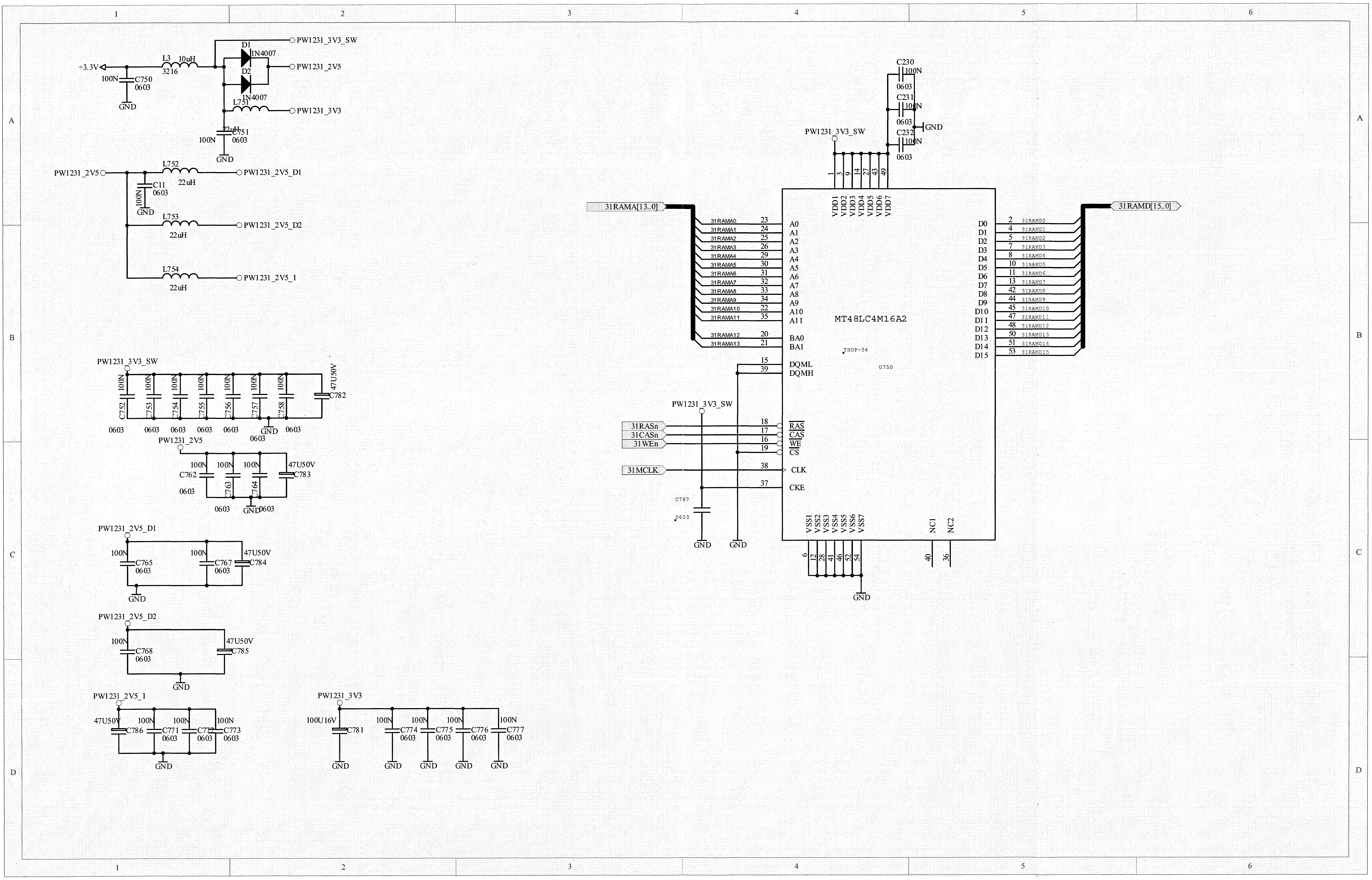
C569
C570
C571
C572
C573
C574
C575
C186
100U16V
L550
22uH
C576
C577
C190
GND
R559
R560
Q550
BC848A
SOT23
LED1_O
R570
220R
R562
R563
Q552
LED2_O
R571
LED2
R561
R564
R565
R566
R567
R568
R553
R554
100R
Q551
Q553
Q554
Q555
VSCL
VSDA
SCL_5V
SDA_5V
+5V_STBY
+5V
R10
STAND_BY_2
Q1
BC848C
R5
R6
1K
R12
R7
R8
R9
Q2
A/D_DIM_SELECT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PW1231_3V3
100N C751 0603
GND
PW1231_2V5
L752 22uH
PW1231_2V5_D1
100N C11 0603
GND
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PW1231_2V5_D2
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100N C755 0603
100N C756 0603
100N C757 0603
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47U50V C783
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100N C767 0603
47U50V C784
GND
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47U50V C785
GND
PW1231_2V5_1
47U50V C786
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100N C772 0603
100N C773 0603
GND
PW1231_3V3
100U16V C781
100N C774 0603
100N C775 0603
100N C776 0603
100N C777 0603
GND
C230 100N 0603
C231 100N 0603
C232 100N 0603
GND
PW1231_3V3_SW
1 3 9 14 27 43 49
VDD1 VDD2 VDD3 VDD4 VDD5 VDD6 VDD7
31RAMA[13..0]
31RAMA0 23 A0
31RAMA1 24 A1
31RAMA2 25 A2
31RAMA3 26 A3
31RAMA4 29 A4
31RAMA5 30 A5
31RAMA6 31 A6
31RAMA7 32 A7
31RAMA8 33 A8
31RAMA9 34 A9
31RAMA10 22 A10
31RAMA11 35 A11
31RAMA12 20 BA0
31RAMA13 21 BA1
15 DQML
39 DQMH
MT48LC4M16A2
TSOP-54
U750
31RAMD[15..0]
D0 2 31RAMD0
D1 4 31RAMD1
D2 5 31RAMD2
D3 7 31RAMD3
D4 8 31RAMD4
D5 10 31RAMD5
D6 11 31RAMD6
D7 13 31RAMD7
D8 42 31RAMD8
D9 44 31RAMD9
D10 45 31RAMD10
D11 47 31RAMD11
D12 48 31RAMD12
D13 50 31RAMD13
D14 51 31RAMD14
D15 53 31RAMD15
PW1231_3V3_SW
31RASn 18 RAS
31CASn 17 CAS
31WEn 16 WE
19 CS
31MCLK 38 CLK
37 CKE
C787 0603
GND
GND
VSS1 VSS2 VSS3 VSS4 VSS5 VSS6 VSS7
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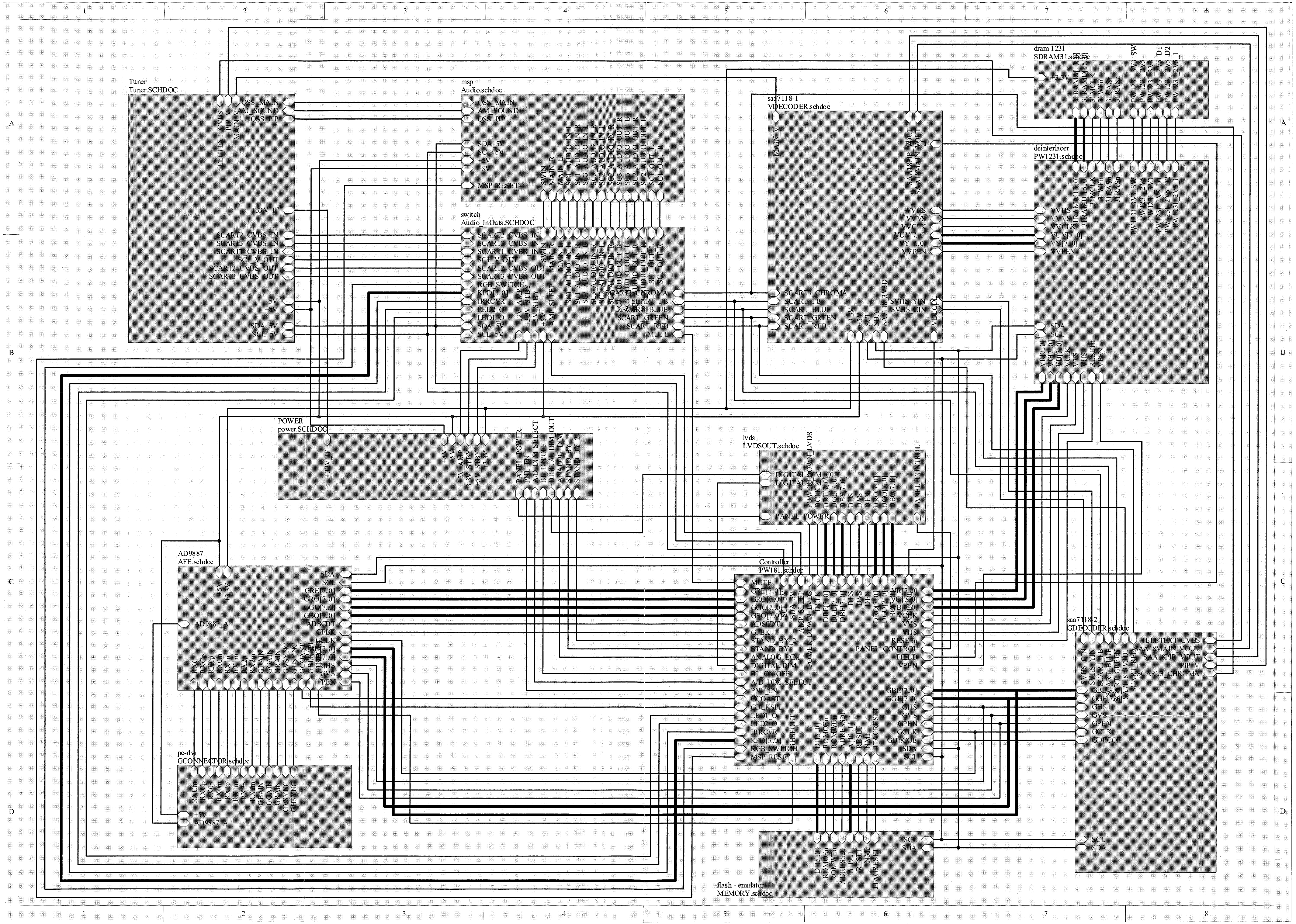
A B C D



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PIP_V
MAIN_V
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AM_SOUND
QSS_PIP
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SCART3_CVBS_IN
SCART1_CVBS_IN
SC1_V_OUT
SCART2_CVBS_OUT
SCART3_CVBS_OUT
+5V
+8V
SDA_5V
SCL_5V
msp
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AM_SOUND
QSS_PIP
SDA_5V
SCL_5V
+5V
+8V
MSP_RESET
SWIN
MAIN_R
MAIN_L
SC1_AUDIO_IN_L
SC1_AUDIO_IN_R
SC3_AUDIO_IN_R
SC3_AUDIO_IN_L
SC2_AUDIO_IN_L
SC2_AUDIO_IN_R
SC3_AUDIO_OUT_R
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SC2_AUDIO_OUT_R
SC2_AUDIO_OUT_L
SC1_OUT_L
SC1_OUT_R
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SCART2_CVBS_IN
SCART3_CVBS_IN
SCART1_CVBS_IN
SC1_V_OUT
SCART2_CVBS_OUT
SCART3_CVBS_OUT
RGB_SWITCH
KPD[3..0]
IRRCVR
LED2_O
LED1_O
SDA_5V
SCL_5V
+12V_AMP
+3.3V_STBY
+5V_STBY
+5V
AMP_SLEEP
SCART3_CHROMA
SCART_FB
SCART_BLUE
SCART_GREEN
SCART_RED
MUTE
saa7118-1
VDECODER.schdoc
MAIN_V
SAA18PIP_VOUT
SAA18MAIN_VOUT
FIELD
VVHS
VVVS
VVCLK
VUV[7..0]
VY[7..0]
VVPEN
SCART3_CHROMA
SCART_FB
SCART_BLUE
SCART_GREEN
SCART_RED
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+5V
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SDA
SA7118_3V3D1
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SVHS_CIN
VDECOE
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31RAMA[13..0]
31RAMD[15..0]
31MCLK
31WEn
31CASn
31RASn
PW1231_3V3_SW
PW1231_2V5
PW1231_3V3
PW1231_2V5_D1
PW1231_2V5_D2
PW1231_2V5_1
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VVHS
VVVS
VVCLK
VUV[7..0]
VY[7..0]
VVPEN
SDA
SCL
VR[7..0]
VG[7..0]
VB[7..0]
VCLK
VVS
VHS
RESETn
VPEN
POWER
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+33V_IF
+8V
+5V
+12V_AMP
+3.3V_STBY
+5V_STBY
+3.3V
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STAND_BY
STAND_BY_2
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DIGITAL_DIM
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POWER_DOWN_LVDS
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DRE[7..0]
DGE[7..0]
DBE[7..0]
DHS
DVS
DEN
DRO[7..0]
DGO[7..0]
DBO[7..0]
PANEL_CONTROL
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+3.3V
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GRO[7..0]
GGO[7..0]
GBO[7..0]
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GCLK
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GGE[7..0]
GHS
GVS
PEN
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RXCp
RX0p
RX0m
RX1p
RX1m
RX2p
RX2m
GBAIN
GGAIN
GRAIN
GVSYNC
GCOAST
GHSYNC
Controller
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GRO[7..0]
GGO[7..0]
GBO[7..0]
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GFBK
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DIGITAL_DIM
BL_ON/OFF
A/D_DIM_SELECT
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GBLKSPL
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LED2_O
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KPD[3..0]
RGB_SWITCH
MSP_RESET
SCL_5V
SDA_5V
AMP_SLEEP
POWER_DOWN_LVDS
DCLK
DRE[7..0]
DGE[7..0]
DBE[7..0]
DHS
DEN
DRO[7..0]
DGO[7..0]
DBO[7..0]
VR[7..0]
VG[7..0]
VB[7..0]
VCLK
VVS
VHS
RESETn
PANEL_CONTROL
FIELD
VPEN
GBE[7..0]
GGE[7..0]
GHS
GVS
GPEN
GCLK
GDECOE
SDA
SCL
GHSFOUT
D[15..0]
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ROMWEn
ADRESS20
A[19..1]
RESET
NMI
JTAGRESET
saa7118-2
GDECODER.schdoc
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SAA18PIP_VOUT
PIP_V
SCART3_CHROMA
SVHS_CIN
SVHS_YIN
SCART_FB
SCART_BLUE
SCART_GREEN
SCART_RED
SA7118_3V3D1
GBE[7..0]
GGE[7..0]
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GVS
GPEN
GCLK
GDECOE
SCL
SDA
pc-dvi
GCONNECTOR.schdoc
RXCm
RXCp
RX0p
RX0m
RX1p
RX1m
RX2p
RX2m
GBAIN
GGAIN
GRAIN
GVSYNC
GHSYNC
+5V
AD9887_A
flash - emulator
MEMORY.schdoc
D[15..0]
ROMOEn
ROMWEn
ADRESS20
A[19..1]
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SDA
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8
A
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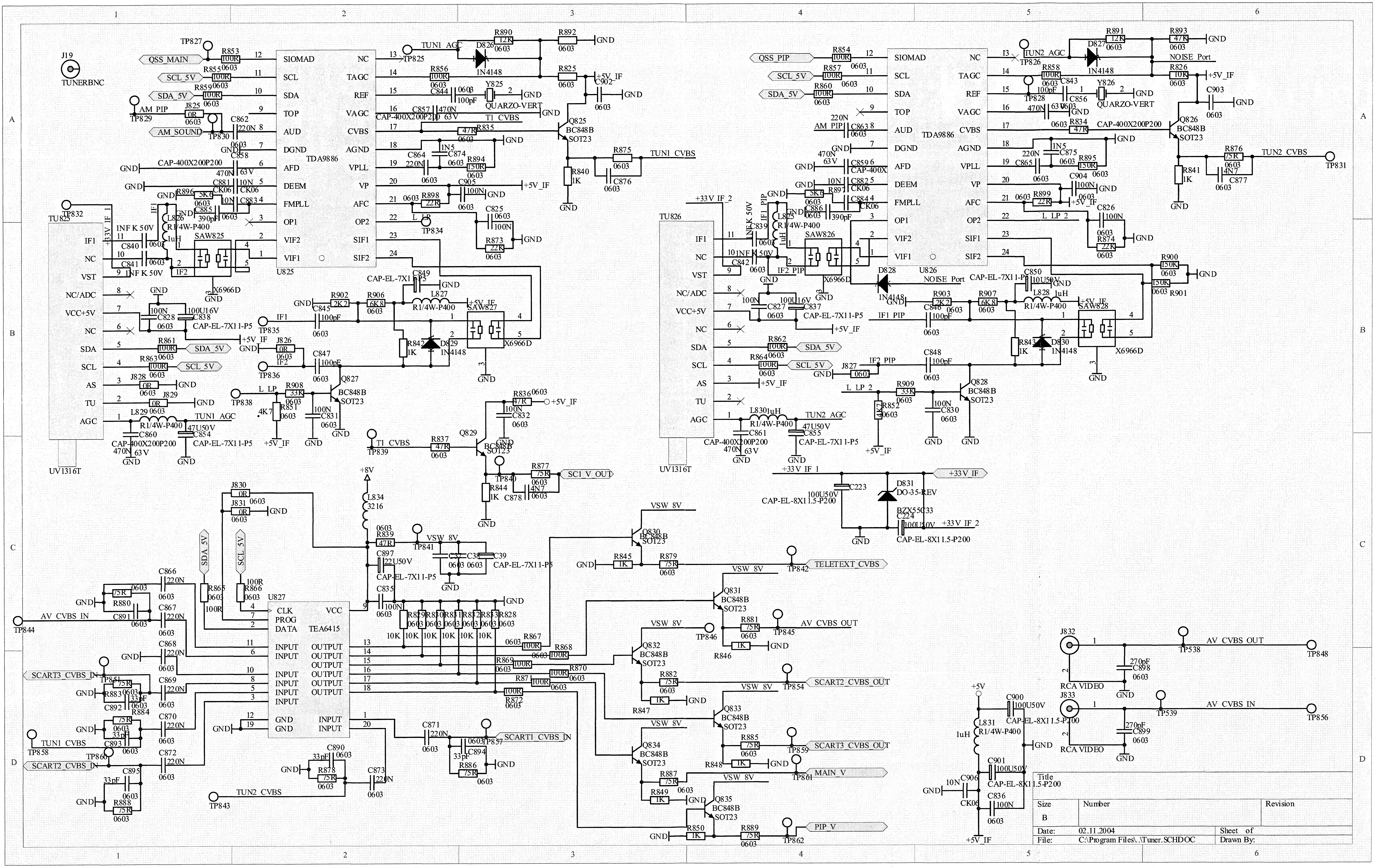
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SDA_5V
AM_PIP
AM_SOUND
TP829
TP830
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R855 100R
R859 100R
J825 0R
C862 220N
C858
R896 5K6
C881 10N
C883
C885 390pF
L826 R1/4W-P400 1uH
SAW825
X6966D
SIOMAD
SCL
SDA
TOP
AUD
DGND
AFD
DEEM
FMPLL
OP1
VIF2
VIF1
NC
TAGC
REF
VAGC
CVBS
AGND
VPLL
VP
AFC
OP2
SIF1
SIF2
TDA9886
U825
TUN1_AGC
TP825
D826 1N4148
R890 12K
R892
R856 100R
R825
C844 100pF
Y825 QUARZO-VERT
C857 470N 63V
CAP-400X200P200
T1_CVBS
R835 47R
C864 220N
C874 1N5
R894 150R
C905 100N
R898 22K
L_LP
TP834
C825 100N
R873 22K
C902
Q825 BC848B SOT23
R875
TUN1_CVBS
R840 1K
C876
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GND
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TU825
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IF1
NC
VST
NC/ADC
VCC+5V
SDA
SCL
AS
TU
AGC
UV1316T
C840 1NF K 50V
C841 1NF K 50V
IF2
C828 100N
C838 100U16V CAP-EL-7X11-P5
R861 100R
R863 100R
J826 0R
J828 0R
J829 0R
L829 R1/4W-P400
C860 CAP-400X200P200 470N 63V
C854 47U50V CAP-EL-7X11-P5
TP835
C845 100pF
R902 2K2
R906 6K8
C849 CAP-EL-7X11-P5
L827 R1/4W-P400
SAW827
R842 1K
D829 1N4148
X6966D
TP836
C847 100pF
Q827 BC848B SOT23
TP838
R908 33K
R851 4K7
C831 100N
R836 47R
C832 100N
Q829 BC848B SOT23
TP839
T1_CVBS
R837 47R
TP840
R877 75R
SC1_V_OUT
R844 1K
C878 4N7
TP826
TUN2_AGC
D827 1N4148
R891 12K
R893 47K
NOISE_Port
R826 10K
R854 100R
R857 100R
R860 100R
QSS_PIP
C843 100pF
Y826 QUARZO-VERT
C856
TP828
C903
C863
C859
C882
C884
C886 390pF
R897 3K6
TDA9886
U826
R834 47R
Q826 BC848B SOT23
C865 220N
C875 1N5
R895 150R
C904 100N
R899 22K
C826 100N
L_LP_2
R874 22K
R876 75R
TUN2_CVBS
TP831
R841 1K
C877 4N7
+33V_IF_2
TU826
C839
L825 R1/4W-P400 1uH
IF1_PIP
SAW826
IF2_PIP
C842 1NF K 50V
X6966D
D828 1N4148
C850 10U50V CAP-EL-7X11-P5
R900 150K
R901 150K
C827 100N
C837 100U16V CAP-EL-7X11-P5
R903 2K2
R907 6K8
L828 1uH R1/4W-P400
SAW828
C846
R843 1K
D830 1N4148
R862 100R
R864 100R
J827 0603
C848 100pF
Q828 BC848B SOT23
R909 33K
R852 4K7
C830 100N
L830 1uH R1/4W-P400
C861 CAP-400X200P200 470N 63V
C855 47U50V CAP-EL-7X11-P5
UV1316T
+33V_IF_1
C223 100U50V CAP-EL-8X11.5-P200
D831 DO-35-REV BZX55C33
+33V_IF
C224 100U50V CAP-EL-8X11.5-P200
+33V_IF_2
+8V
L834 3216
J830 0R
J831 0R
R839 47R
VSW_8V
TP841
C37
C38
C39 CAP-EL-7X11-P5
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R845 1K
R879 75R
TP842
TELETEXT_CVBS
SDA_5V
SCL_5V
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R866 100R
U827
TEA6415
CLK
PROG
DATA
VCC
INPUT
OUTPUT
GND
R829
R830
R831
R832
R833
R828
10K
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R869 100R
R870 100R
R871 100R
R872 100R
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SCART3_CVBS_IN
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R883 75R
C892 33pF
R884 75R
C893 33pF
TUN1_CVBS
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SCART2_CVBS_IN
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SCART1_CVBS_IN
Q831 BC848B SOT23
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SCART2_CVBS_OUT
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R850 1K
R889 75R
TP862
PIP_V
J832
RCA VIDEO
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AV_CVBS_OUT
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J833
RCA VIDEO
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C899 270pF
AV_CVBS_IN
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+5V
C900 100U50V CAP-EL-8X11.5-P200
L831 1uH R1/4W-P400
C901 100U50V CAP-EL-8X11.5-P200
C906 10N CK06
C836 100N
+5V_IF
1
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A
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D

Title

Size	Number	Revision
B		

Date: 02.11.2004 Sheet of

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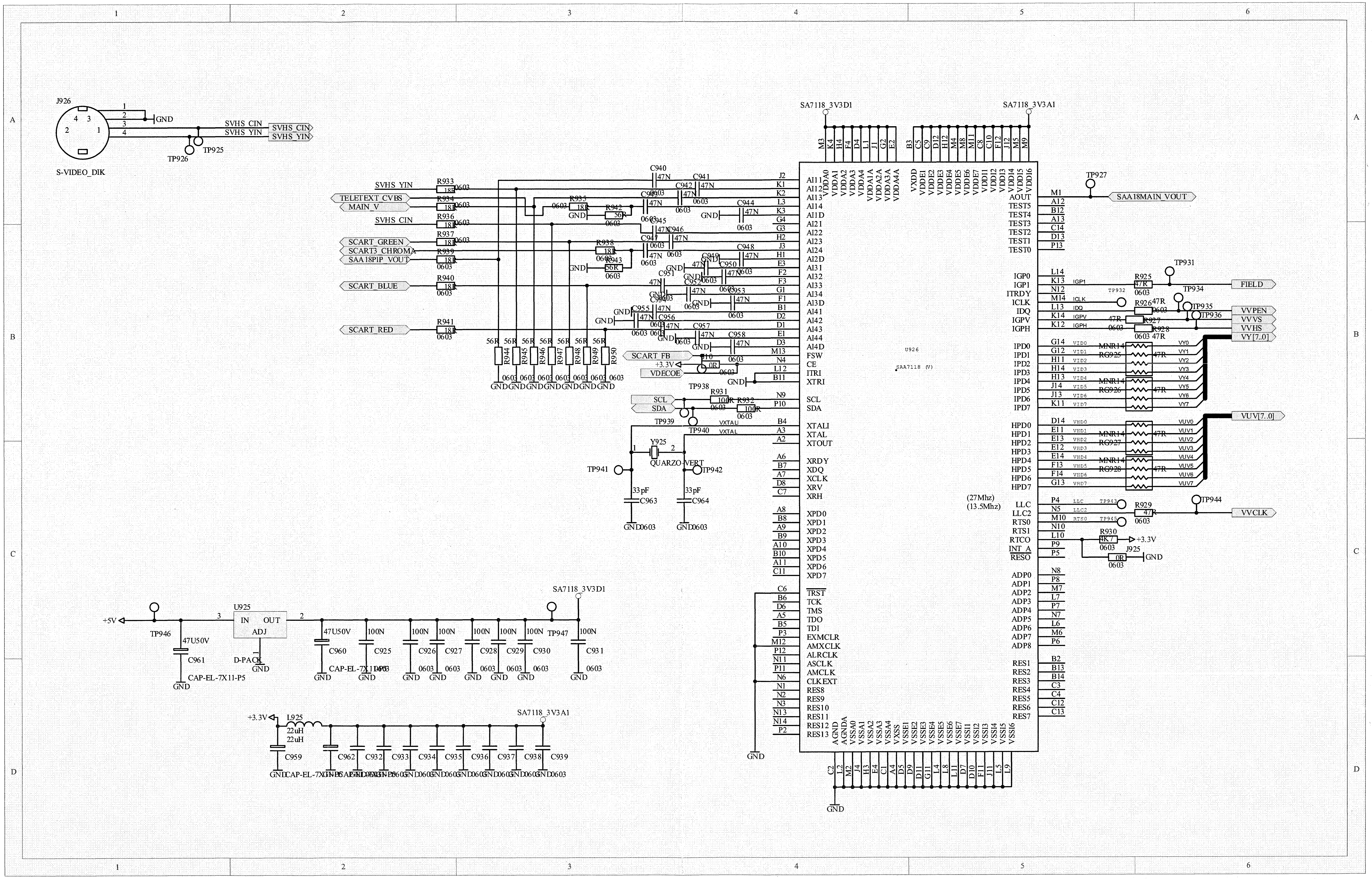

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SVHS_CIN
SCART_GREEN
SCART3_CHROMA
SAA18PIP_VOUT
SCART_BLUE
SCART_RED
SCART_FB
+3.3V
VDECOE
SCL
SDA
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QUARZO-VERT
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TEST4
TEST3
TEST2
TEST1
TEST0
IGP0
IGP1
ITRDY
ICLK
IDQ
IGPV
IGPH
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TP934
TP935
TP936
FIELD
VVPEN
VVVS
VVHS
VY[7..0]
VUV[7..0]
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IPD1
IPD2
IPD3
IPD4
IPD5
IPD6
IPD7
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HPD2
HPD3
HPD4
HPD5
HPD6
HPD7
MNR14
RG925
RG926
RG927
RG928
(27Mhz)
(13.5Mhz)
LLC
LLC2
RTS0
RTS1
RTCO
INT_A
RESO
TP944
R929
VVCLK
R930
J925
AI11
AI12
AI13
AI14
AI1D
AI21
AI22
AI23
AI24
AI2D
AI31
AI32
AI33
AI34
AI3D
AI41
AI42
AI43
AI44
AI4D
FSW
CE
ITRI
XTRI
SCL
SDA
XTALI
XTAL
XTOUT
XRDY
XDQ
XCLK
XRV
XRH
XPD0
XPD1
XPD2
XPD3
XPD4
XPD5
XPD6
XPD7
TRST
TCK
TMS
TDO
TDI
EXMCLR
AMXCLK
ALRCLK
ASCLK
AMCLK
CLKEXT
RES8
RES9
RES10
RES11
RES12
RES13
ADP0
ADP1
ADP2
ADP3
ADP4
ADP5
ADP6
ADP7
ADP8
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RES2
RES3
RES4
RES5
RES6
RES7
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VSSE3
VSSE4
VSSE5
VSSE6
VSSE7
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VSSI4
VSSI5
VSSI6
+5V
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U925
IN
OUT
ADJ
D-PACK
47U50V
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CAP-EL-7X11-P5
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C927
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C930
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C962
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R947
R948
R949
R950
R931
R932
R925
R926
R927
R928
18R
56R
47R
100R
0R
47N
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METR-M1326

BEKO

42" PLASMA TELEVISION

Service Manual
PA Chassis
Version1.0

CONTENTS PAGE

Contents 1
Safety Precautions 2
Importent notes on safety 3-4
Product Introduction and Technical Specification 5-6
Instructions manual 7-23
Display Module Block Diagram and Specification 24-33
Function of Display Boards 34
Panel Repair Process 35
Waveform of X-B's ,Y-B's 36-37
Panel Troubleshooting 38-43
AV3 Board block Diagram 44
Connection Diagram 45
Service Mode 46
Exploded views 47-49
Spare Parts List 50-51
Circuit Diagrams(AV3 Boards) Attached

SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in the Schematic Diagram and Replacement Parts List.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent X-RADIATION, Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.

General Guidance

An **Isolation Transformer should always be used** during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks.

It will also protect the receiver and it's components from being damaged by accidental shorts of the circuitary that may be inadvertently introduced during the service operation.

If any fuse (or Fusible Resistor) in this monitor is blown, replace it with the specified.

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1W), keep the resistor 10mm away from PCB.

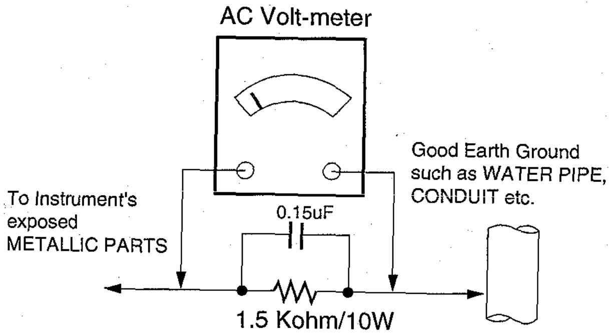
Keep wires away from high voltage or high temperature parts.

X-RAY Radiation

Leakage Current Cold Check(Antenna Cold Check)
With the instrument AC plug removed from AC source, connect an electrical jumper across the two AC plug prongs. Place the AC switch in the on positioin, connect one lead of ohm-meter to the AC plug prongs tied together and touch other ohm-meter lead in turn to each exposed metallic parts such as antenna terminals, phone jacks, etc.
If the exposed metallic part has a return path to the chassis, the measured resistance should be between 1MΩ and 5.2MΩ.
When the exposed metal has no return path to the chassis the reading must be infinite.
An other abnormality exists that must be corrected before the receiver is returned to the customer.

Leakage Current Hot Check (See below Figure)
Plug the AC cord directly into the AC outlet.
Do not use a line Isolation Transformer during this check.
Connect 1.5K/10watt resistor in parallel with a 0.15uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.
Measure the AC voltage across the resistor using AC voltmeter with 1000 ohms/volt or more sensitivity.
Reverse plug the AC cord into the AC outlet and repeat AC voltage measurements for each esposed metallic part. Any voltage measured must not exceed 0.75 volt RMS which is corresponds to 0.5mA.
In case any measurement is out of the limits sepcified, there is possibility of shock hazard and the set must be checked and repaired before it is returned to the customer.

Leakage Current Hot Check circuit


AC Volt-meter
To Instrument's exposed METALLIC PARTS
0.15uF
Good Earth Ground such as WATER PIPE, CONDUIT etc.
1.5 Kohm/10W

Standards

The plasma display at hand is an information technology device.

The plasma display complies with the following guidelines and standards:

- 89/336/CEE from 3 May 1989 with subsequent modifications (Directive 92/31/CEE from April 1992 and Directive 93/68/CEE from 22 July 1993)
- 73/23/CEE from 19 February 1973 with subsequent modifications (Directive 93/68/CEE from 22 July 1993)
- EN55022, EN55024, EN61000-3-2/-3 (Electromagnetic Compatibility)
- EN60950 (Safety Requirements)

The conformity with the requirements is characterised by the CE symbol attached to the product.

⚠ WARNING

REFERENCE:
This is a Class A device. This device can cause radio disturbances in the living area; in this case the operator can be required to implement appropriate measures.

Suitable measures could be:

- In the event of disturbances, connect the device with a different socket
- Align the antenna of a disturbed radio receiver differently
- Increase the distance between the disturbed device and this product

The manufacturer cannot be held liable for operation beyond the operating conditions as described in the manual. In addition, your product liability and warranty claims expire as a result of such action.

Important notes on safety!

Read and heed the notes on safety so that no hazard to your health arises during contractual use. Errors during installation and connection can damage the device or subsequently related devices.
Always keep the operating instructions within reach. Heed the warnings on the device and in the operating instructions.

- General reference
  Before you connect the plasma display, please carefully read through the general notes on safety and the operating instructions. Only in this manner can you utilise all functions safely and reliably.

  As far as possible, keep the operating instructions together with the device so that you can use it to look up information.

  Heed the warnings on the device and in the operating instructions.

  Never allow children to utilise electrical devices without supervision.

- Operation
  The plasma TV acquired by you, meets the highest quality codes and standards to be found in this business segment. A plasma display consists of a multitude of so called pixels. One pixel consists of 3 elements (red, green and blue). Even using the highest quality control practices during the manufacture of the displays, it can not be 100 % excluded that some pixels or pixel elements will be defective. These defects may appear as permanent illuminated pixels, non illuminating pixels or unstable pixels (flickering) respectively. We therefore ask for your understanding when we declare that these defects are not covered under the warranty liability. This is valid insofar that the sum of all defective pixels or pixel elements does not exceed 0,01 % of the total amount.

  The brightness and contrast of plasma displays decreases with time.

  Plasma displays are phosphor based and under certain operating conditions, a so-called „Burn-In" effect may occur. This is in fact a degrigation of the phosphor and is a natural process in plasma technology.

Such operating conditions are:
- static images being displayed for long periods
- continues display of the same background
- use of a non full screen format (e.g. 4:3) for a long periods.

Once Burn-In has occurred it is normally irreversible.

To avoid or to reduce the Burn-In effect, please follow the listed recommendations:
- please use moving images or continuous moving static images in full screen format (slide show) during the first 100 hours of operation
- please use your plasma TV in a full screen format (16:9)
- in case the plasma display is used as a PC monitor, please activate the screen saver
- if possible please use moving images
- always switch the screen off, if it is not in use
- decrease contrast and brightness as much as possible
- if possible display images with maximum colour depth and scale

Certain conditions may cause a humming noise in the displays electronics. This is usually caused by the mains power supply having different ground wires. One remedy for solving this problem is to insert a filter between antenna cable and antenna input. These filters are available at all specialised trade outlets.

If the plasma display is connected to an external antenna, it has to be grounded to protect against electrical hazards and static discharges. The grounding must conform and be in accordance with the actual regulations in force.

Important notes on safety!

- Environmental conditions
  Never operate the plasma display under environmental conditions which differ from those of the technical data. Divergent conditions can lead to endangerment, fire or breakdown of the device.

  Protect the plasma display against moisture. This pertains to permanent high humidity, the proximity to water, water drops and water splashes as well as rain. Do not place any water-filled containers (e.g. vases) on the device.

  Protect the device against heat. Avoid the proximity to fire, heating devices, ovens or permanent exposure to direct sunlight.

  Protect the display against heat accumulation. Do not cover the ventilation slots. Maintain a distance of at least 10 cm above and below the ventilation from sides 4cm from rear 4cm slots as well as laterally to furniture and to the ceiling. Do not furnish the device with curtains.

  The display is designed for mounting in landscape format on walls or installations.

- Mains connection
  The mains input and the mains switch are located on the rear side. The mains input is located on the upper right and the mains switch is placed in the upper middle. For safe disconnection of the display from the mains voltage, the mains switch is to be turned off and the mains cable is to be removed from the mains input module.
  Connect the plasma display only to a socket with earthing contacts installed according to regulations, and whose main voltage conforms with the device's technical data. See to it that the mains plug and the socket are accessible at all times. Install the mains cable in such a fashion that nobody can get caught in it. Use only the supplied mains cable. Protect it against damages, and do not make any alterations to it. Never use a damaged mains cable.

- Signal inputs
  Always turn the plasma display and the signal source off before you establish a connection between both devices.

- Disturbances
  In the event of damages to the mains cable or the device, immediately pull the mains plug from the socket.
  Under no circumstances should you attempt to open and/or to repair the device yourself. Instead, contact our Service Hotline or another suitable professional workshop.

- Batteries
  Batteries can be life-threatening when swallowed. That's why you should safeguard batteries from the reach of small children. Immediate medical assistance should be utilised if a battery has been swallowed.
  Always take the exhausted batteries out of the remote control immediately, since these leak and can cause damage as a result.
  The enclosed batteries may not be charged or reactivated by other means, not taken apart, thrown in fire or short-circuited.

TO FULLY DISCONNECT THE TV SWITCH OFF THE MAINS SOCKET AND REMOVE THE POWER PLUG.

Important notes on safety!

Exhausted batteries do not belong in household waste. The batteries must be disposed of at the collection points provided for this purpose.

- Cleaning and maintenance
  Before cleaning, turn the device off, and pull the mains plug from the socket. Wait a few minutes so that the capacitors in the device can be completely discharged.

  Use only a slightly dampened, soft cloth for cleaning. You should avoid chemical solvents and cleaning agents, because these can damage the surfaces.

- The plasma display generates high voltage internally for the gas discharge. Turn the device off and pull the mains plug from the socket during installation, maintenance and repairs. Wait a few minutes so that the capacitors in the device can be completely discharged.

- In case foreign elements such as water, liquids, metal parts, etc. get into the plasma display, pull the mains plug out immediately. Never attempt to touch anything inside the device with any kind of objects. The danger of an electric shock or accident exists.

- Pull out the mains plug immediately if smoke, unpleasant odour or unusual noises are emitted from the device. Also proceed in the same manner if the display is no longer able to present an image after being turned on or during operation. Never attempt to continue operating the display in this condition.

- In the event of lengthy absence or during thunderstorms, pull the mains plug from the socket, and pull the house antenna socket from the antenna jack.

- Never plug-in or pull-out the mains plug with wet hands. Never operate the mains switch with wet hands.

- Utilise only the supplied mains cable. Protect it against damages, and do not make any alterations to it. Never use a damaged mains cable.

- The plasma display has a glass surface. Should the device be subjected to excessive loading (e.g. through shock, vibration, bending and heat shock), the glass surface can break. Do not subject the glass surface to any pressure or shock. Should the glass be broken, immediately pull the mains plug and do not touch the broken glass with bare hands.

- When the plasma display has been switched to the stand-by mode it is still connected to the mains. You must switch the mains switch into the O position or pull the mains plug from the socket for complete disconnection.

- For ergonomic reasons it is recommended to avoid using red and blue fonts or symbols on dark backgrounds. Such a display causes poor readability due to the lower contrast, and prematurely fatigues the eyes. Therefore, please use high-contrast displays as much as possible, e.g. black font on a white background.

- During the connection of external loudspeakers, pay attention to the loudspeaker output technical data. In the event of insufficient dimensioning of the loudspeaker, the loudspeaker and/or the built-in amplifier can be damaged.

- Packaging and packing resources which are no longer needed are able to be recycled, and should always be turned in for recycling.

Product Introduction

State of the art signal processing, a flat 16:9 plasma display with 106 cm screen diagonal, and an attractive housing which features lesser modular depth in combination with a user-friendly, interactive remote control present a new generation of information presentation.

The utilisation of the newest plasma display generation guarantees high-contrast, brilliant video images as well as computer displays and presentations. A variety of interconnection options facilitate integration into existing and new systems of visualisation.

- Display: flat - large - slim
  The new plasma display offers 852 x 480 pixel resolution on a screen surface of 920mm x 512mm. 16.7 million colours with 256 RGB gradations (8bit resolution) offer unlimited colour display and true-to-detail image playback. Enjoy video and data images on a 106 cm screen diagonal, and be impressed by the slight depth of only 129mm.

- Quiet
  A new type of cooling system enables the operation of the plasma display without disturbing fan noises. Quiet like a conventional television, the plasma display provides the new standard for the living room and for the conference room.
  A remaining audio noise level of approx. 25 dB A in consequence of plasma technology corresponds to the current state of the art.

- Everything in one housing
  Display, power supply and image & sound signal processing are accommodated in one housing. This facilitates mounting on the wall. Hanging on a wall like a painting, all signal inputs and outputs are easily accessible. Bothe of the loudspeaker jacks offer well-balanced listening pleasure in connection with external loudspeakers.

- Video / Computer VGA / Audio
  The broad connection capability provides the PAL/NTSC/SECAM video standards (CVBS, RGB and Y/C), multistandard TV tuner (which offers up to 99 TV channels with automatic and manual programming), VGA/SVGA, and even includes a 16:9 VGA format with 848 x 480 pixel resolution.

- User interface
  IR remote control and On-Screen-Display (OSD) make operation a matter of child's play. The OSD offers clearly structured menus for the selection of signal sources, image and sound.

- Digital signal processing
  The plasma display is equipped with the latest standard of digital signal processing in 8-bit technology. It offers – to name just a few things – characteristics such as efficient algorithms in order to present 4:3 video and data images in high quality while filling the screen on a 16:9 display.

-

  all circumstances
  In order to maintain the high contrast ratio and the outstanding readability even under critical lighting conditions, the new front glass pane is provided with fine etching on the front side.

- Installation: Simple and fast
  Various attachment devices are provided to you for installation — no matter whether the display is attached to the wall, or even installed on the floor or a table.

- Advantages of digital technique
  Digital graphics cards offer superior imaging performances. With the digital DVI connection the plasma display offers convincing performances, and remains downwardly compatible to existing analogue graphics cards.

- Digital noise suppression

  per OSD, and align the quality of the image material accordingaly. The automatic reduction of noise suppression ensures artefact-free reproduction of rapidly moving image components.

- Exact and constant colour rendition
  The superior, finely-nuanced colour rendition is supplemented by the possibility of gamma adjustment. You can make the optimal gamma, colour temperature, contrast and brightness adjustment for every input per OSD.

PC FORMATS	DOS Modes 640 x 400 and 720 x 400 VGA (640 x 480) @ 50Hz – 90Hz repetition rate SVGA (800 x 600) @ 50Hz – 90Hz repetition rate WVGA (848 x 480) @ 50Hz – 90Hz repetition rate XGA (1024 x 768) @ 50Hz – 90Hz repetition rate
IMAGE FORMATS	4:3, 16:9, zoom, user zoom, screen-filling, automatic non-linear
INPUTS/VIDEO	Mini DIN .... Y/C / Hi 8 (PAL, SECAM, NTSC) Cinch .... CVBS Video In (PAL, SECAM, NTSC) SCART 1 .... CVBS, RGB (PAL, SECAM, NTSC), CVBS output SCART 2 .... CVBS (PAL, SECAM, NTSC), RF Tuner .... VHF/UHF/HYPERBAND for terrestrial antennas or cable networks (47MHz to 861MHz) (PAL/SECAM)
PC	DVI (I) .... VGA/SVGA/WVGA/XGA Analogue and digital (DVI)
AUDIO INPUTS	Y/C (S-Video) CVBS SCART 1 SCART 2 PC
OUTPUTS	Audio Line Out . . adjustable loudspeaker .... 2 x 7W sine @ 4
CONTROL	On-Screen Display Menu .... 6 languages (D, GB, F, I, E, NL) IR remote control CMM3
VIDEOTEXT	TOP FLOF .... 256 pages of memory control with special keys on the remote control
VOLTAGE	220V – 240V AC alternating voltage 50Hz/60Hz
CURRENT	1,8A

SCREEN

- Size:
  42" - 106cm
- Format:
  16:9
- Presentable image size:
  920 mm (horizontal) x 518 mm (vertical)
- Elimination of reflections:
  Finely etched filter screens
- Transmission:
  52 %
- Angle of viewing:
  > 160°
- Contrast ratio:
  600 : 1 (dark room) typ.

RESOLUTION

- Resolution:
  852 x 480 pixels

COLOUR DISPLAY

- Colour display:
  16.7 million simultaneous colours

OPERATION

- Control elements:
  Mains switch, IR remote control, On-Screen-Display, automatic and manual tuning system with automatic channel storage, 99 channel slots

PC FREQUENCY RANGE

- Horizontal 30 kHz – 80 kHz
  vertical 50 Hz – 90 Hz
  clock frequency 95 MHz max.
- DOS 640 x 400 and 720 x 400
  VGA (640 x 480)@ 50Hz - 90Hz repeat rate
  SVGA (800 x 600)@ 50Hz - 90Hz repeat rate
  WVGA (848 x 480) @ 50Hz - 90Hz repeat rate
  XGA (1024 x 768) @ 50Hz - 90Hz repeat rate
- Format presentation
  PC 1:1, Format-filling, User Zoom
  (40% - 140%), Fit-to-Screen

VIDEO/SYNCHRONISATION

RGB analogue and automatic sync recognition

- Level: 0.7Vss +/– 3dB @ 75Ω
- Sync types: Sync-on-Green (SoG), Composite, Separate
- Level: TTL
- VESA DDC: Version 2B compatible
- Cinch (RCA plug) and SCART, 1Vrms nominal

VIDEO STANDARDS

- Video: PAL/SECAM/NTSC
- TV tuner: PAL/SECAM
- 47 MHz to 861 MHz: VHF/UHF/HYPERBAND for terrestrial antennas or cable networks
- PALplus, Cinescope: Automatic format recognition
- Format presentations: 4:3, 16:9, Zoom, User Zoom (40% - 140%), Fit-to-Screen, Non Linear, Auto

VIDEO/PC INPUTS

- Mains connection: IEC plug-and-socket connector
- TV tuner input: IEC plug-and-socket connector, 75Ω input resistance
- SCART inputs: RGB(1), CVBS "On", CVBS "Off", Audio On/Off
- CVBS input: Cinch (RCA plug) 1Vss
  @ 75 Ω input resistance
- Y/C (S-Video) input: Mini DIN (HOSIDEN)
  Y: 1Vss @ 75Ω input resistance
  C: 0.3Vss (PAL), 0.286Vss (SECAM) @ 75Ω
  input resistance
- VGA/SVGA/WVGA/XGA: DVI-I (DDWG)

AUDIO

- Stereo inputs: 3 x Cinch, 1Vrms (CVBS, Y/C, PC)
- Stereo inputs: 2 x SCART, 1Vrms
- Stereo line output: 1 x Cinch, adjustable
- Stereo LS output:
  1 x Cinch, 2 x 7 W sine @ 4Ω,
  20 Hz – 20 kHz

OPERATING CONDITIONS

- Temperature range (operation):
  +5°C to +35°C
- Temperature range (storage):
  -20°C to +60°C
- Humidity (non-condensing):
  10% to 85%
- Altitude: max. 2,000 m (ca. 7,000 ft)
- Voltage supply: AC 220-240V
- Network frequency: 50Hz/60Hz±10%
- Power consumption: 1.8 A 280 W typical;
  5 W (RMS) Stand-by mode

CONFORMITIES

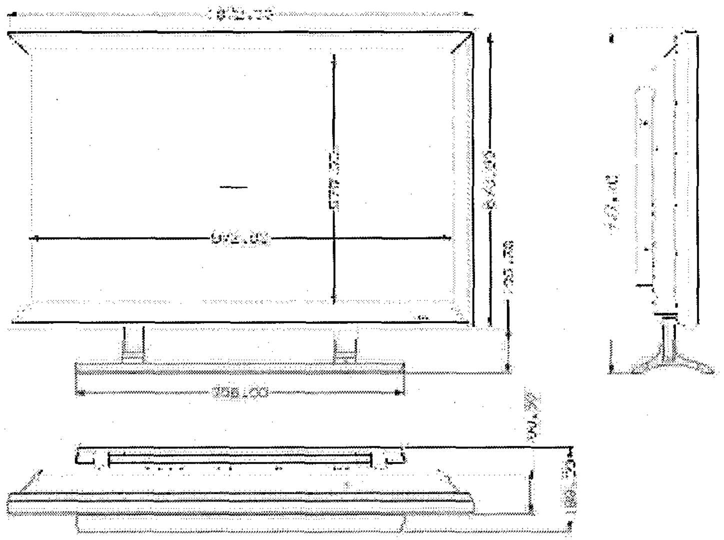
- EMC: EN55022, EN55024, EN61000-3-2/-3
- Safety: EN60950, CE

DIMENSIONS & WEIGHT

- H x W x D:
  approx. 670 x 1072 x 99,6 mm
- Weight:
  approx. 45,6 kg

IR REMOTE CONTROL

- CMM3
- Range: approx. 7 m
- Functional angle: +/–30
- Code: RECS 80



Installation and Start-up

Checking the Scope of Delivery

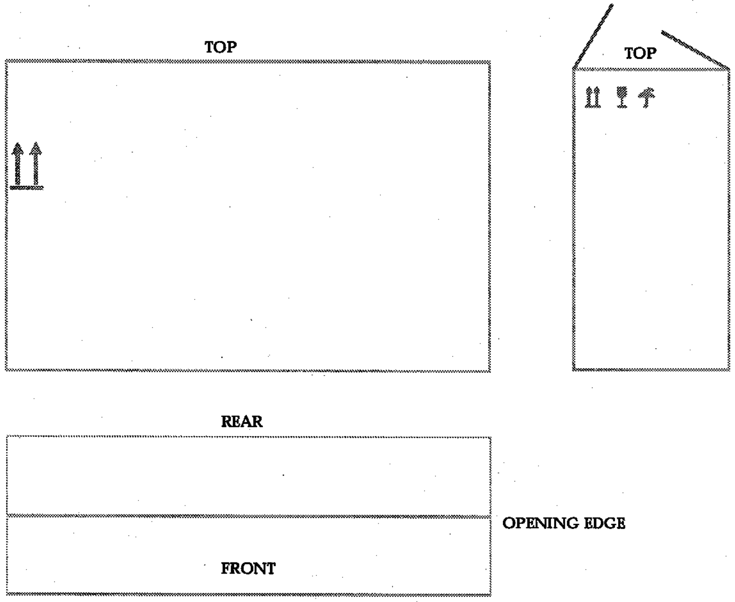
Your plasma display has been tested with great care and packed before delivery. It is available for use immediately after unpacking. After unpacking the display, please check for possible transport damages and completeness of delivery. In the event of transport damages, the supplier can only allow your claims if you inform them about this before the initial start-up. If a part of the scope of delivery is missing, please contact the Service Hotline. The missing component will be sent to you immediately without charge. Please always keep this operator's manual in the vicinity of the installation site so that it is available at your side for support at all times.

Scope of delivery:

1. Plasma Display
2. Remote control
3. 2 x LR03 batteries
4. Mains cable
5. Operator's manual
6. Warranty card

Packing

Packing dimensions H x W x D: approx. 839 x 1264 x 288 mm



- Place the carton upright with the underside on firm ground. You will recognise the top side by the direction of the arrowheads on the longitudinal side.
- Open the packaging tape on the opening edge, and fold back both lids outwardly.
- Remove both of the packing elements which are lying on the top, as well as the packing element which is located on the back side of the device.
- Now remove the carton, along with the accessory parts which are located on the back side, from the packaging.
- Remove the wall bracket from the back side of the device. For this purpose, please slightly tilt the display forward at first, and pull out the Styrofoam block which is situated between the back side of the device and the wall bracket. After that you can pull out (upwardly) the wall bracket from the packaging.
- Depending on your choice, you can either mount the wall bracket on the mounting site, or place the standing pedestal on a secure base surface.
- After mounting the wall bracket or the table base, remove the protective foil on the upper side of the display so that you can remove the display from the packaging.
- Always remove the display from the packaging only with two people. Trying to remove the display by yourself is hazardous to your health.
- Hang the removed display either in the wall mounting bracket unit or place the display on the standing base.
- Please pay attention that you do not place the display on its underside, because the infrared sensor is located there.

For Your Information and Safety

Installation references

Select the installation site according to the following criteria:

1. Line of vision

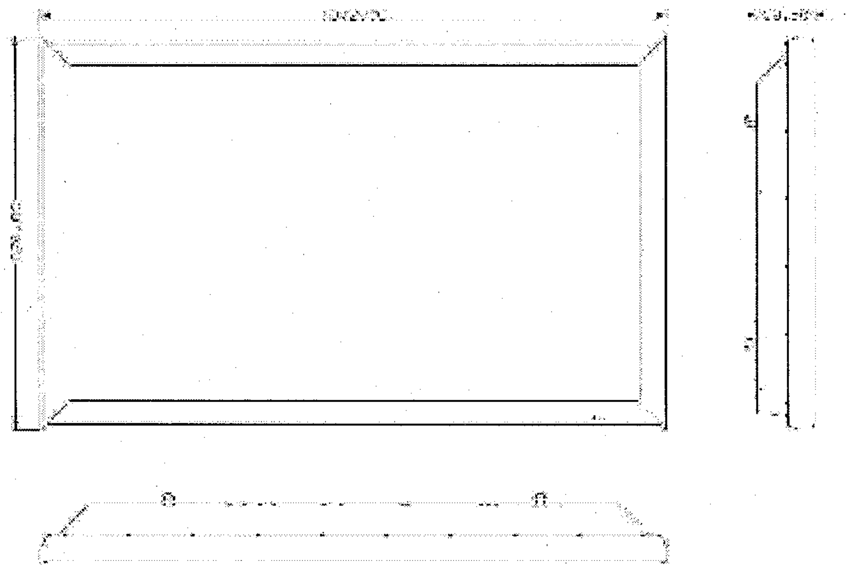
Despite its very large line of vision, the plasma display provides the best performance in a directly vertical line of vision. Align the display along the axis of the most frequently utilised line of vision.

2. Installation site

A suitable installation site should comply with the following criteria:

•Light reflections	Avoid installation opposite windows or other light sources.
•Access to mains input	The mains input and mains switch should be easily accessible at all times.
• Ventilation	Maintain a distance of at least 10 cm above and beneath the ventilation slots to furnishings or to the ceiling.
•Ambient temperature	It must lie between 5° and 35C for safe and reliable operation.

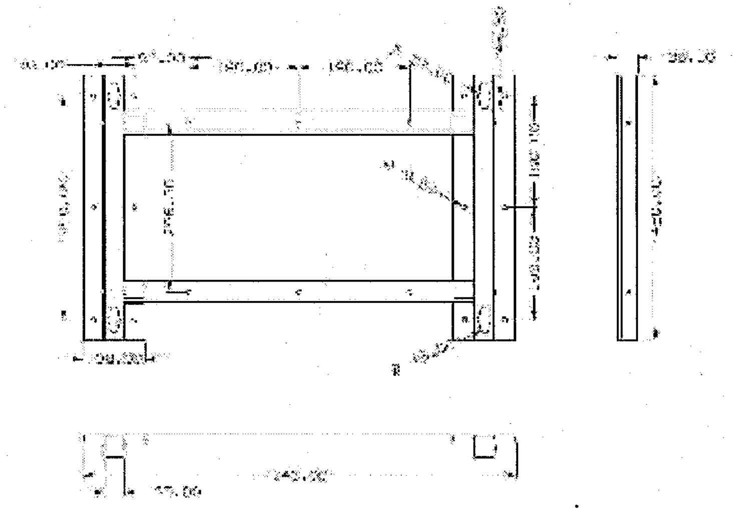
Reference (instructions) for Wall Mounting



⚠ CAUTION

- The plasma display may only be mounted on vertical (plumb) walls by means of the wall mounting unit.
- Before beginning the mounting, make sure that the display is turned off and the mains cable and signal cable are unplugged.
- The background has to be firm and structurally able to carry a load.
- Appropriate materials are to be utilised for varying wall superstructures, such as wooden walls or hollow-space walls. If there's any doubt, contact your responsible sales or service department.

The wall mounting unit is located on the back side of the device. It consists of two vertical brackets which are connected with cross studs. In the packaging you will find a template which will facilitate the mounting on the wall.
The wall mounting unit functions as a type of interface between the display and the wall. The concept consists of attaching the mounting unit to the wall with the help of the template in the first phase, and thereafter hanging the display in the mounting unit.
The manufacturer recommends using M8 dowels.

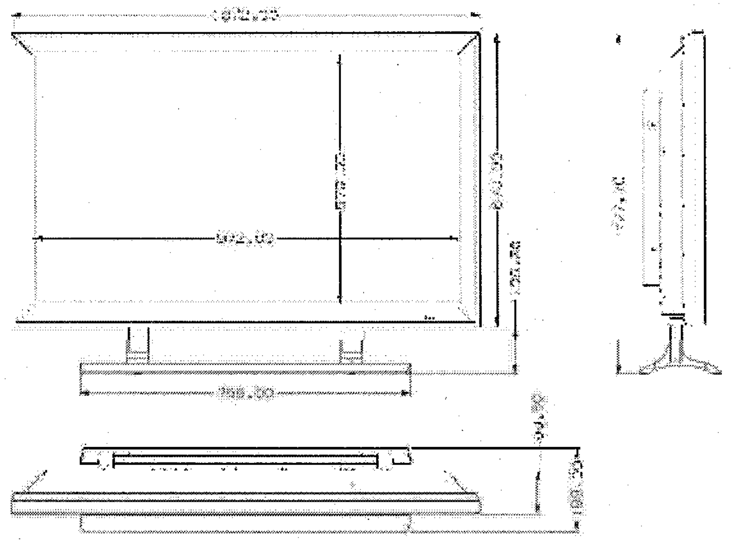


- The attachment points are situated horizontally at a spacing of 746 mm and vertically at a spacing of 380 mm. The spacing between the upper edge and the upper attachment point amounts to 65.5 mm, including the plastic covering.
- The centre of each of the attachment points is shifted 15 mm inwards in reference to the vertical edge of the wall mounting unit.
- The holes for the screws have a diameter of 8,5 mm.
- Please see to it that the display is about 126,25 mm lower than the attachment points on the wall after being mounted.
- Mount the display with the pins on the back side in the larger openings of the wall mounting unit, and slowly lower it into the U-shaped cut-out.

Reference (instructions) for Table Mounting

The table base is located in the accessories carton. It consists of the wall mounting unit and the two L-shaped feet which are connected with one another as a table base.

- Insert the two L-shaped feet from below into the vertical bracket of the wall mounting unit.
- Screw in each foot base and wall mounting unit with the enclosed attachment material (2 screws each for lateral attachment and in the rear at the attachment points). The screw type is M8 hexagon socket with spanner wrench size 5.
- Place the table base on a stable and horizontal base surface.
- Mount the display with the pins on the back side into the larger openings of the wall mounting unit, and slowly lower it into the U-shaped cut-out.



Installation of Connecting Line

The following is to be heeded during the connection and installation of the mains cable and the video cable (e.g. SCART, Y/C . . .):

- Please lead the connecting lines to the rear. Please pay attention that the signal lines are not placed directly along the display surface.
- In the interest of good image quality, utilise only shielded, high-quality signal cable. A high-quality 75Ω coaxial cable should be utilised for connecting the video signal. Poor quality signal cable can result in strong disturbances and formation of shadows in the displayed image, as well as exceeding the permissible EMC level. The mechanical interlocks of the individual plug-and-socket connectors are necessary for perfect and safe operation of the device.
- You should also avoid placing signal sources such as a PC or a video recorder in front of the display. Please place these signal sources on the side or behind of the display.

Start-up

There are a few tasks to take care of before you turn on your plasma display for the first time.

- Turn your plasma display off during all tasks for start-up, and pull the mains plug from the socket.

1. Connection of signal sources: TV, VIDEO, PC
2. Connection of sound playback
3. Install the batteries in the remote control
4. Connect the mains cable
5. Turn on the plasma display

Connection of Signal Sources

Connect the cables of your signal sources at the input panel of the plasma display.
You need an antenna cable for the built-in TV tuner, and a suitable cinch cable for external audio signal sources.
Cables for connecting PC signal sources are provided.

- Always turn the device off before connecting a signal source to your plasma display.

2.7.2 Connection of Sound (playback)

Your plasma display has various audio outputs located on the input panel for sound playback. The connection of your hi-fi or Dolby Surround system is also possible, as well as the connection of external loudspeakers to your built-in amplifier.

- Turn your plasma display off before you connect external loudspeakers. Note the technical data of the loudspeaker output, and pay attention to sufficient dimensioning of the loudspeaker.
- Always turn the device off before you establish a connection between your hi-fi or Dolby Surround system and your plasma display.

Remote Control

All of your plasma display's selection and adjustment possibilities are able to be carried out with the remote control. Menus on the display are available for your support. You will find the description of the menus starting on page 25 in this manual.

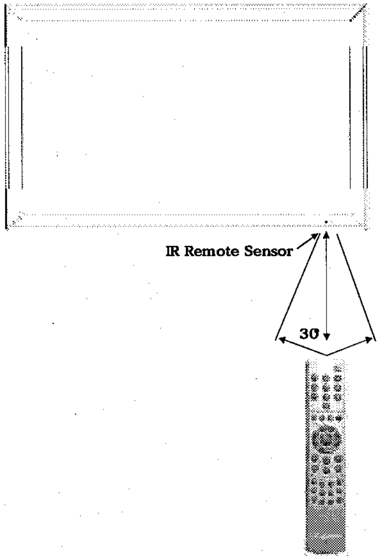
- Remote control range: 7m
  The remote control only functions properly when there is no obstruction between the operation and the infrared sensor on the front side of the plasma display.

It can happen that the display is not able to receive the remote control signals or their function range is severely inhibited, although there is no obstruction in the way. The reason for this is the infrared radiation which the display itself emits. Come closer to the display with the remote control.

The remote control range is reduced when the batteries become weaker. In this case, please replace the batteries.

•Installing the batteries

Please push aside the battery compartment cover with a downward motion. The cover unlocks and is able to be removed.
Insert the enclosed batteries. While doing so, pay attention to the proper polarity of the batteries. This is indicated in the battery compartment.
In order to close the battery compartment, put the cover back on again, and carefully press it shut. Your remote control is now ready for operation.



⚠ CAUTION

Reference for disposal of batteries:
Exhausted batteries do not belong in household waste. They must be deposited at a collection site for old batteries (e.g. battery collection box at dealer) or turned in with hazardous waste.

Connection of Mains Cable

Always utilise the enclosed mains cable in order to guarantee optimal image quality.
First of all, insert the mains cable into the input panel, and only thereafter into the socket.

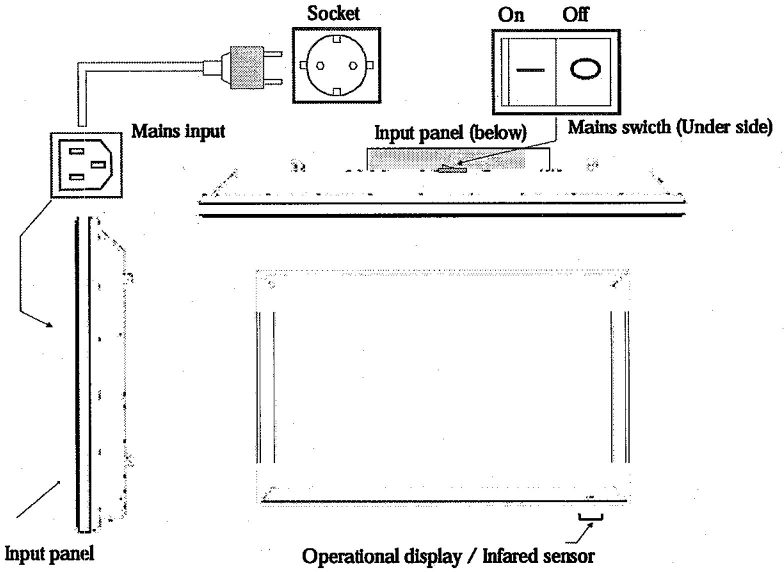
- Never utilise a damaged mains cable!
- Use only sockets with a protective earthing conductor system to ensure safe operation.

A line filter and switches for stabilisation of the supply voltages ensure safe operation within normal mains voltage variations. In case the mains voltage lies beyond the stated limits, please contact your responsible sales office. In the event the mains cable cannot be utilised on account of differing standards in your country, please see to it that you utilise a mains cable commensurate with the country-specific standards which are listed in the following:

• USA	UL
• Germany	VDE
• Canada	CSA
• Switzerland	SEV
• Great Britain	BASEC/BS
• Japan	MITI

This list is not complete. For reasons of safety it may be necessary to select a different safety standard.

At any rate, the mains cable has to consist of three wire conductors of at least 10A/0.75 mm^2 in order to avoid an accident as a result of electric shock. One of the three wires is implemented on both ends of the cable as an earthing contact connection.


Socket
On
Off
Mains input
Input panel (below)
Mains swicth (Under side)
Input panel
Operational display / Infared sensor

Turning On the Plasma Display

You can only control your plasma display with the remote control when the device is in stand-by mode. Switch the mains switch in the input panel into position I . The operational display on the front side of the display screen lights up red.

- The plasma display is always connected to the power supply network in stand-by mode. You must switch the mains switch into position 0 and pull the mains plug from the socket for complete disconnection.
- The display has a mains adapter, and can be operated with a supply voltage of 220V - 240V AC and 50Hz/60Hz±10%.

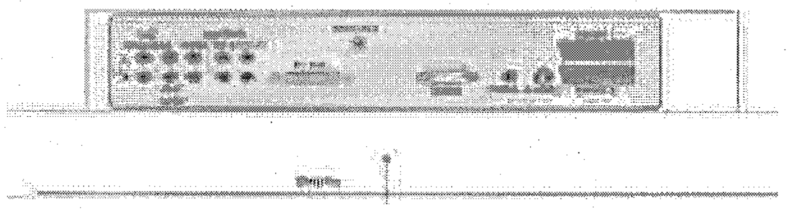
Interconnection Options

Appliance Coupler Summary

On the plasma display's input panel you will find interconnection options for:

- Terrestrial antenna
- cable network
- Video recorder
- Satellite tuner
- Video-CD player
- DVD player
- Video camera
- Personal computer

Please note that for safe operation only devices can be connected to the interfaces which comply with the corresponding safety requirements.



The plasma display's input panel provides various connections as a link to video sources (PAL, SECAM and NTSC) such as video cameras, DVD players and video recorders.

- The Y/C input (S-Video) provides the analogue luminance and colour signals on separate lines. It is frequently utilised as a link to video cameras and DVD players.
- The CVBS video input provides the luminance and colour signals on one line. It provides a cinch plug-and-socket connector which is a very reasonable and simple link, and is frequently utilised as a link to video recorders.
- The SCART 1 video input provides the connection to CVBS and RGB video inputs, a CVBS output for connecting a video recorder, and audio inputs & outputs.
- The SCART 2 video input provides CVBS video inputs, a CVBS output for connecting a video recorder, and audio inputs & outputs.
- The RF tuner input with IEC jack links the display for connection of terrestrial antennas or cable channel systems.
- The combined input DVI-I (analogue and digital) serves for the connection of high-resolution graphic card signals.
- The RS232 control input for connecting a PC facilitates diagnosis in the event of servicing.
- The OSD input menu enables you to select the desired video input.
- The "ADJUSTMENT" menu enables you to set the configuration of inputs so that, for example, the same input is presented after turning on the display.

Connection to Compatible PC's

The plasma display is suitable for utilisation together with compatible computers. Your PC has one of the following configurations:

- A built-in graphics adapter.
- An installed graphics card.

Both variations have one analogue and one digital video output jack for connection of a monitor. If you are not sure about which jack the monitor is to be connected to, you can read more about this in either the graphics card or computer user manuals. In case of doubt, ask for details at your service department. Please use only the enclosed signal cable for connection.

For the connection of your monitor to the system, proceed as follows:

1. Turn off the power supply to the computer and the display.
2. In case it is necessary, install a graphics card according to the directions in the graphics card user manual. Make sure that the graphics card utilised generates a video format that lies within the limits which are stated in the specifications (VGA, XGA).
3. Connect the signal cable to the display's signal input (DVI-I), and to your computer's corresponding video jack (15-pin HD-Sub) or DVI.

Attention: Falsely connected signal cables can lead to irregularities in monitor operation, a poor image quality or damage to the display, and shorten service life as a result.

4. Connect the supplied mains cable on one side with the display, and on the other side with a grounded wall socket.
5. Turn on the display and the computer, and select an appropriate input (PC/RGB or PC/DVI).
6. During the first utilisation of an analogue video format (RGB). The plasma display always automatically executes the auto-adjust function. During this period the display image "shuttles about" in order to attain the optimal position and playback.
7. You can store frequently used formats as user formats. The display recognises these formats, and immediately presents them in correct fashion without execution of the auto-adjust function.
8. Finish the adjustment of your display by actuating the following listed OSD function, which is found in the "INPUTS ADJUSTMENT" menu: "USER FORMATS".
9. The DDC compatibility ensures that the utilised graphics card only generates video formats within the limits stated in the specifications.
10. Many graphics cards offer formats with 848 x 480 screen resolution in 16:9 format. The utilisation of this resolution is recommended for optimal display presentation. Please use 848 x 480 screen resolution only with vertical frequency ranges of 60 Hz or 88 Hz

Reference:

With some inconvenient PC formats, the H/V position and image size have to possibly be manually adjusted for ending the alignment with the geometric adjustments in this menu. The "AUTO-ADJUST" function is extremely dependent on the image presentation.

The presentation of a white frame or a grid cross is well-suited. Should problems arise during connection of the display, please read Chapter 6: "Maintenance (Maintenance and Repairs), use the description of the individual OSD functions, or contact your service site.

Operating Modes

⚠ ATTENTION

Operating mode at the beginning of utilisation

Due to the functionality of the Plasma-TV please pay attention, that particularly during the first 100 to 150 operation hours the display has to operate with a full screen format adjustment (see submenu Display, Picture Format). This prevents the formation of brightness differences in the display areas. As an alternative to the picture format 4:3 the adjustment Video NIS should be selected.
Further on, in order to prevent the formation of permanent shadows in the displayed image, please avoid to show fixed-images of any kind (PC mode, teletext pages, Photo CD image etc.) during the first operation hours. If the Plasma-TV will be used as a PC monitor, the utilisation of a screensaver is recommended.

PC mode

For optimal image reproduction, we recommend the 848 x 480, 640 x 480 or 720 x 400 pixel resolutions. The 848 x 480 pixel resolution corresponds to the display matrix, and offers the best image reproduction. You can obtain the driver for this resolution on the Internet pages of most of the well-known manufacturers of graphics cards.
In contrast to applications with CRT monitors, with flat displays it is not necessary to select a high image refresh for a flicker-free presentation. A refresh of 60Hz is recommended.

Video recorder mode

The utilisation of Y/C (S-Video) inputs (see fig. page 18) is recommended for enhancement of image quality - if your recorder offers playback in Y/C (S-Video) format.

DVD player mode

The application of the RGB operating mode, which can be connected to the SCART 1 input, is recommended for optimal utilisation. In case your player does not offer this operating mode, please use the Y/C (S-Video) signal mode (see fig. page 18).

Image sticking

The manufacturer would like to point out to you that during lengthy viewing of freeze pictures (e.g. PC playback), the image is still slightly visible in the full mask for a few minutes during the subsequent playback of a different source. This is known as "image sticking". This "vanishing" residual image is caused by the system, and does not represent a flaw. Therefore it cannot be considered as a case for warranty claim.

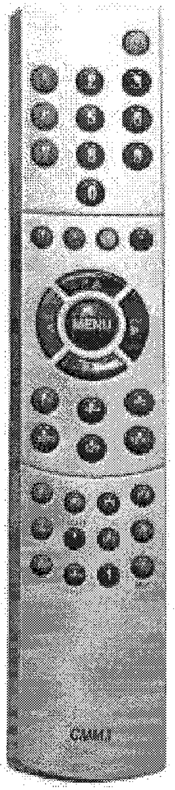
Video cable

A high-quality 75Ω coaxial cable should be utilised for the connection of the video signal. Poor quality signal cable can result in strong disturbances and formation of shadows in the displayed image, as well as exceeding the permissible EMC level. The mechanical interlocks of the individual plug-and-socket connectors are necessary for perfect and safe operation of the device.

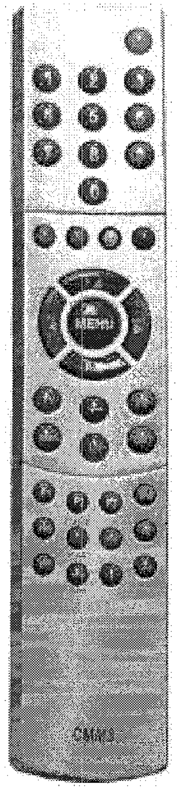
Remote control

Direct Functions

- The remote control only functions if the plasma display has been turned on with the mains switch beforehand.

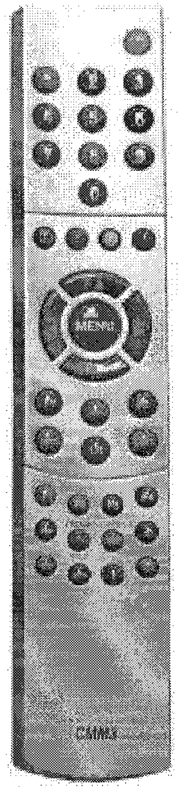


STDB ⏻	After you have turned on the display once with the mains switch, you can turn it on and off with the remote control (stand-by). Press the keys TV, VIDEO, PC, or 1,2, ... in order to turn on the display. Press the stand-by button in order to switch the display into stand-by mode. CAUTION: If the display has been turned on in stand-by mode, it is still linked with the mains. For complete disconnection you must first switch the mains switch into the "off" (0) position, and then pull the mains cable.
TV	You can switch directly to TV mode with this key.
VIDEO	You can switch directly to VIDEO mode (SCART1 -> SCART2 -> CVBS -> Y/C) with this key.
PC	You can switch directly to PC mode (PC RGB -> PC DVI) with this key.
FREEZE	With this key you can "freeze" the actual image. The freeze picture remains on the screen until you push this key again.
TEXT	This key serves for switching into the teletext operating mode.
🔇 Mute	This key turns the sound off until you press the key again or change the volume.
M/S	With this key you can switch between playback in stereo, "Stereo Enlarged", mono, or "pseudo stereo"; or, respectively, you can switch between Channel A or B in two-language sound.
MENU	OSD user guide recall and abort
P▲ / P	This function enables the selection of television channels in ascending or descending order.
VOL + / VOL –	You can increase and decrease the volume of the audio playback with this key.



◄ ►	This function enables the selection and aborting of the submenu.
1 ... 9 and 0	Direct statement of programme slot, teletext page selection.
- /--	With this key you can switch between the one-digit programme numbers (1...9) and the two-digit numbers (11...99).
PIP	With this key you can recall the Picture-in-Picture (PIP) function, which allows the simultaneous presentation of video signals on the PC signal. The PIP is always blended into the lower right corner. You can change the size and the position in the OSD.
L/?	With this key you can jump directly into the TV operating mode in the "PROGRAMME LIST" menu.
AUTO	In the PC mode you can call the AUTOADJUST function with this key. In the other operating modes you call hereby directly the picture format AUTO.
✧ F	With this key you can switch back and forth between the different image formats (1:1 -> Fit to Screen -> User Zoom) or (4:3 -> 16:9 -> User Zoom).
i	Pressing this key shows information on the current programme and on the signal source. You can switch through the individual submenus by pressing this key on the basic setting.
◕	With this key you can fade in and fade out the time.
Red, green, blue key	Teletext The respective function is determined by the actual teletext page and described there. If the TV channel offers TOP teletext information, you will recognise this in the multicoloured info line at the bottom.
M / RED	The red key is utilised in the teletext and auto-tuning mode. In the teletext mode the function assignment is effected through a fade-in in the lower display area. In most cases the red key is assigned for the selection function. In the auto-tuning operating mode the function assignment is effected by the fade-in of a red field.

Everyday Settings



GREEN	In the teletext mode the green key is often utilised for downward movement. Function depends on TV channel. Can also call other functions.
RED	In the teletext mode the red key is often utilised for upward movement. Function depends on TV channel. Can also call other functions.
BLUE	In the teletext mode the blue key is often utilised for the activation of a selected function or page. Function depends on TV channel. Can also call other functions.
FREEZE	Page change stopping/starting. Some teletext pages consist of several sub-pages, which are automatically broadcast in succession. With this key you can hold the page being shown at the moment on the display.
PAGE	Enlarge page. Press this key several times. At first, the upper, and then the lower and then the complete teletext page will be shown.
L / ?	There are hidden messages on some teletext pages. Press this key to view the messages.
	Directly selecting the page Enter the desired number of the page with the numerical keys. As long as the number is incomplete, the display "P 2 – –" appears in the upper left corner of the display screen.
F 1	Configuration-contingent assignment, unused.
F 2	Configuration-contingent assignment, unused.
F 3	Configuration-contingent assignment, unused.
F 4	Configuration-contingent assignment, unused.

On-Screen Display (OSD)

There are six keys on the remote control for menu control. These keys have the following functions:

1. Press the MENU key and the main menu appears on the upper left hand edge of the screen. The main menu "INPUTS" is illustrated in colour, and is ready for the selection of an input with the ► key. Press the► key in order to activate the selected submenu or the selected function. The selected menu is blended in and provides you with further functions.

2. Press the◄ key in order to exit the selected submenu or the selected function.

3. Press the▲ key or▼ keys in order to make a selection in the main menu or in submenus. The selected menu or the selected function is illustrated in colour during the selection.

4. Press the► key to activate a function. In many cases, the selected function will be displayed as a bar graph and figures. The key reduces the value of a selected function, and the key increases the value. The implemented values are executed immediately.

5. Exiting the OSD stores the changes made.

6. You can exit the OSD by pressing the "MENU" key. In this case the OSD will fade out immediately.

Main Menu

Inputs >
Picture >
Display >
Sound >
Set Up >
Info >

INPUTS Submenu

Inputs >	Select:	PC (RGB)
Picture >	Source Settings	>
Display >		
Sound >		
Set Up >		
Info >		

- PC (DVI)
- PC (RGB)
- CVBS
- SCART 2 (without RGB)
- SCART 1 (with RGB)
- Tuner
- Y/C (S-Video)

- The submenu INPUTS is dependent on the selected signal source.

SOURCE SETTINGS Submenu

PC (RGB)	H freq.: V freq.:	38 kHz 60 Hz
	Pixel Clk:	43.53 MHz
	H / V Pol:	+ / -
	User timings	>
	Auto Setup	®
	V Pos.:	▨
	V Size:	▨
	H Size:	▨
	H Pos.:	▨
	Phase:	▨

Auto Mode Set Up of geometry parameter

- The plasma display always executes the auto-adjust function automatically during the initial utilisation of a video format. During this time the display presentation shuttles back and forth in order to obtain the optimal position and playback.
- You can store frequently used formats as user timings. The display recognises these formats, and immediately presents them in correct fashion without execution of the auto-adjust function.
- The DDC compatibility ensures that the graphic cards utilised only generate video formats within the limits stated in the specifications.

USER TIMINGS Submenu

H freq.:			
V freq.:			
Pixel Clk:			
H / V pole:			
User timings	>	Position	1
Auto Setup ®		Recall ®	
V pos.:		Save ®	
V size:		Delete all ®	
H size:			
H pos.:			
Phase:			

SOURCE SETTINGS Submenu

PC (DVI)	H freq.: V freq.:	38 kHz 60 Hz
	Pixel Clk:	43.53 MHz
	H / V Pol:	+ / -
	Auto Setup	®

SOURCE SETTINGS Submenu

Inputs >	Select:	YC		
Picture >	Source Settings	>	TV Standard:	PAL BG
Display >			VCR Stability:	On
Sound >				
Set Up >				
Info >				

- The following TV standards are automatically recognised and indicated in the OSD after recognition: PAL/SECAM/NTSC.
- VCR stability can be turned on or off. Turning on this function improves the image reproduction with connected video recorders which are slightly unstable.

SOURCE SETTINGS Submenu

Inputs >	Select: CVBS		
Picture >	Source Settings >	TV Standard:	PAL BG
Display >		VCR Stability:	On
Sound >			
Set Up >			
Info >			

- The following TV standards are automatically recognised and indicated in the OSD after recognition: PAL/SECAM/NTSC.
- VCR stability can be turned on or off. Turning on this function improves the image reproduction with connected video recorders which are slightly unstable.

SOURCE SETTINGS Submenu

Inputs >	Select: SCART 1		
Picture >	Source Settings >	TV Standard:	PAL BG
Display >		TV SCART:	Decoder
Sound >		RGB Input:	Scart
Set Up >		VCR Stability:	On
Info >			

- The following TV standards are automatically recognised and indicated in the OSD after recognition: PAL/SECAM/NTSC.
- VCR stability can be turned on or off. Turning on this function improves the image reproduction with connected video recorders which are slightly unstable.
- The TV SCART option provides the functions DECODER, VCR and NOT USED.
- The submenu RGB INPUT offers the following choices: ALWAYS, SCART, NOT USED.

SOURCE SETTINGS Submenu

Inputs >	Select: SCART 2		
Picture >	Source Settings >	TV Standard:	PAL BG
Display >		TV SCART:	Decoder
Sound >		VCR Stability:	On
Set Up >			
Info >			

- The following TV standards are automatically recognised and indicated in the OSD after recognition: PAL/SECAM/NTSC.
- VCR stability can be turned on or off. Turning on this function improves the image reproduction with connected video recorders which are slightly unstable.
- The TV SCART option provides the functions DECODER, VCR and NOT USED.

SOURCE SETTINGS Submenu

Inputs >	Select: TUNER		
Picture >	Source Settings >	Auto Search	>
Display >		Manual Search	>
Sound >		Sort	>
Set Up >		Delete	>
Info >			

AUTO SEARCH Submenu

TV Standard:	PAL BG
Search Form:	
Start Search ®	
Program Start Point:	

You can select the following TV standards:
- Auto DK, Auto BG, Auto I, Auto L, Auto L`
- SECAM DK, SECAM L, SECAM L`, SECAM BG
- PAL DK, PAL I, PAL BG

TV Standard:	
Search Form:	All Programmes
Start Search ®	New Programmes
Program Start Point:	

TV Standard:	
Search Form:	
Start Search ®	
Program Start Point:	10

TV Standard:	
Search Form:	
Start Search ®	
Program Start Point:	10

START SEARCH Submenu

1 ARD	2	3	4	5	6	7	8	9	10
11 ZDF									
21 WDR									
31 ___									
41									
51									
61									
71									
81									
91								99	
Search in Progress ... 10% (Red) ? : Abort search									

Inputs >	Select:	TUNER		
Picture >	Source Settings	>	Auto Search	>
Display >			Manual Search	>
Sound >			Sort	>
Set Up >			Delete	>
Info >				

MANUAL SEARCH Submenu

Programme:	11
TV Standard:	PAL BG
Frequency:	055.05 MHz
Name:	ZDF

SOURCE SETTINGS Submenu

Inputs >	Select:	TUNER		
Picture >	Source Settings	>	Auto Search	>
Display >			Manual Search	>
Sound >			Sort	>
Set Up >			Delete	>
Info >				

SORTING Submenu

1 ARD	2	3	4	5	6	7	8	9	10
11 ZDF									
21 WDR									
31 ---									
41									
51									
61									
71									
81									
91								99	
(Green)_ : Select a programme. Current = 31 MENU: Stop sorting									
(Blue)_ : Insert an empty programme at current position.									
(Yellow)_ : Swap selected programme with current position.									

Inputs >	Select:	TUNER		
Picture >	Source Settings	>	Auto Search	>
Display >			Manual Search	>
Sound >			Sorting	>
Set Up >			Delete	>
Info >				

DELETE Submenu

1 ARD	2	3	4	5	6	7	8	9	10
11 ZDF									
21 WDR									
31 ---									
41									
51									
61									
71									
81									
91								99	
(Red)_ : Delete current programme MENU: Stop deleting									
(Green)_ : Select delete range start point. Current = 31									
(Blue)_ : Select delete range end point. Current = 31									
(Yellow)_ : Confirm delete from start point to end point.									

Submenu PICTURE for PC Signals

Inputs >			
Picture >	Contrast:	92	▨
Display >	Brightness:	48	▨
Sound >	Sharpness:		▨
Set Up >			
Info >			

- Contrast, Brightness -> Press the ▲ key to increase the value of the Set Up, and ▼ to make the image darker. Range 0 to 127.
- Image definition -> Press the ▲ key to enhance the image definition. 5 definition settings are available.

Submenu PICTURE for Video Input Signals

Inputs >			
Picture >	Contrast:	92	▨
Display >	Brightness:	48	▨
Sound >	Sharpness:		▨
Set Up >	Color:	40	▨
Info >	DNC:	15	▨
	Photo CD:		On
	Interlace:		Auto Mode
	Anti-flicker:		On

- Contrast, Brightness -> Press the ▲ key to increase and/or ▼ decrease the Set Ups.
- Sharpness -> Adjustable filter functions which can enhance the image definition of the playback depending on the programme material.
- Color -> Press the ▲ key to change the entire colour sensation in the direction Green, and press the key to change it in the direction violet.
- The menu point DNC (Digital Noise Control) allows the connection of noise suppression in 32 intervals, which enhances the image quality in weak signals.
- The menu point Photo CD allows the optimised connection of colour and interlaced Set Ups for the playback of Photo CD images.
- The Interlace menu point enables switching between an optimised interlace playback for freeze pictures, automatic switching between freeze pictures and video images for camera operation and movie playback.
- The Anti-flicker menu point switches during the playback of video signals between a synchronous and jerk-free 50 Hz operation and a flicker-free 60 Hz operation. The display starts up after first being turn on in 60 Hz operation.
- "On" signifies 60Hz operation and "Off" signifies 50Hz operation. The slight flickering in 50 Hz is strongly contingent on the displayed image material. The selected setting is retained after the display is turned off.

Submenu DISPLAY for PC Signals

Inputs >				
Picture >				
Display >	Picture Format	>	Zoom:	Full Screen
Sound >	Color Temperature:		User zoom:	▨
Set Up >	Picture Contrast:			
Info >	Picture-In-Picture	>		
	Freeze Picture	®		
	User Color Temp	>		

- The Zoom submenu allows the Set Up of a series of zoom factors which allow the partial, complete or enlarged display of the image.
- The Zoom menu point allows the following choices: Full Screen, PC FILL AR, User Zoom, PC 1:1.
- PC Fill AR scales the input format to 480 lines, and scales the horizontal resolution in 4:3 formats to 640 points, in order not to alter the aspect ratios.
- PC 1:1 does not scale the input format in horizontal and vertical direction. It is centrally displayed in the centre of the screen.

Submenu DISPLAY for Video Signals

Inputs >				
Picture >				
Display >	Picture Format	>	Zoom:	Full Screen
Sound >	Color Temperature:		User zoom:	▨
Set Up >	Picture Contrast:			
Info >	Freeze Picture	®		
	User Color Temp	>		

- The Zoom submenu allows the Set Up of a series of zoom factors which allow the partial, complete or enlarged display of the image.
- The Zoom menu point allows the following choices: Video 4:3, Full Screen, Video 16:9, Zoom, User Zoom, Video NIS (non-linear scaling), Auto.
- The effects of these zoom functions on the image presentation are summarised in section 5.

Submenu DISPLAY for PC / Video Signals

Inputs >			
Picture >			
Display >	Picture Format >		
Sound >	Color Temperature:	normal	warm
Set Up >	Picture Contrast:		normal
Info >	Picture-In-Picture >		cold
	Freeze Picture ®		User
	User Color Temp >		

- Open the selection with the ▸ key, and select one of the indicated colour temperatures. You can configure the user colour temperature at the end of the DISPLAY menu.

Submenu DISPLAY for PC / Video Signals

Inputs >			
Picture >			
Display >	Picture Format >		
Sound >	Color Temperature:		
Set Up >	Picture Contrast:	Light	Light
Info >	Picture-In-Picture >		Ideal
	Freeze Picture ®		Dark
	User Color Temp >		

- Open the selection with the ▸ key, and select one of the indicated contrast characteristics.

Submenu DISPLAY for PC Signals

Inputs >			
Picture >			
Display >	Picture Format >		
Sound >	Color Temperature:		
Set Up >	Picture Contrast:		
Info >	Picture-In-Picture >	Size (On/Off)	Off
	Freeze Picture ®	Source:	Tuner
	User Color Temp >	Horizontal Pos.:	▨
		Vertical Pos.:	▨

- The Picture-in-Picture (PIP) menu appears only during selection of one of the two PC signal sources. The PC image is displayed in the full mask, and the selected video image can be called-in as a fade-in.
- Open the selection with the ▸ key, and start the image fade-in by selecting PIP "On".
- The size of the fade-in can be additionally changed here in three intervals – from small via medium to large.
- The source for the image fade-in can be selected from among all video outputs.
- The position of the fade-in can be changed in a vertical and horizontal direction. The fade-in always starts in the lower right corner so that the OSD is not concealed.

Submenu DISPLAY for PC / Video Signals

Inputs >		
Picture >		
Display >	Picture Format	>
Sound >	Color Temperature:	
Set Up >	Picture Contrast:	
Info >	Picture-In-Picture	>
	Freeze Picture	®
	User Color Temp	>

- You can stop or continue the video image in this menu or with the FREEZE key.

Submenu DISPLAY for PC / Video Signals

Inputs >					
Picture >					
Display >	Picture Format	>			
Sound >	Color Temperature:				
Set Up >	Picture Contrast:				
Info >	Picture-In-Picture	>			
	Freeze Picture	®			
	User Color Temp	>	Red	128	▨
			Green	127	▨
			Blue	128	▨

Submenu SOUND for PC / Video Signals

Inputs >			
Picture >			
Display >			
Sound >	Volume:		▨
Set Up >	Balance:		▨
Info >	Equalizer:		Rock
	Option:		Stereo
	Volume Line Out:		▨
	Max Startup Volume:		▨
	AVC:		On
	User equalizer	>	

Submenu Sound for PC / Video Signals

Inputs >				
Picture >				
Display >				
Sound >	Volume:			
Set Up >	Balance:			
Info >	Equalizer:			
	Option:			
	Volume Line Out:			
	Max Startup Volume:			
	AVC:			
	User equalizer	>	< 120 Hz	▨
			500 Hz	▨
			1.5 kHz	▨
			5 kHz	▨
			> 10 kHz	▨

Submenu SET UP for PC / Video Signals

Inputs >		
Picture >		
Display >		
Sound >		
Set Up >	Display Source Info:	On
Info >	Language:	English
	OSD Set Up	>
	Pwr Down / Stand-By	>
	Reset to factory Defaults	>
	Sleep Timer:	Off

- Choices for info fade-in: "On" or "Off"
- Language choices: German, English, French, Italian, Spanish, Dutch

Submenu SET UP for PC / Video Signals

Inputs >				
Picture >				
Display >				
Sound >				
Set Up >	Display Source Info:	On		
Info >	Language:	English		
	OSD Set Up	>	Time Out:	5 sec.
	Pwr Down / Stand-By	>	Transparency:	Off
	Reset to factory Defaults	>		
	Sleep Timer:	Off		

- Choices for Sleep Timer disable and Transparency OSD: "Off" and "On".
- Time Out choices: "Off", 5, 10 and 15 seconds after the last actuation.

Submenu SET UP for PC / Video Signals

Inputs >				
Picture >				
Display >				
Sound >				
Set Up >	Display Source Info:	On		
Info >	Language:	English		
	OSD Set Up	>		
	Pwr Down / Stand-By	>	Show Logo:	On
	Reset to factory Defaults	>	Reaction on PC syncs:	Off
	Sleep Timer:	Off		

- Choices for Display, Logo and Reaction PC sync: "OFF" and "ON".
- Sleep Timer choices: "Off", 0:30, 1:00, 1:30, 2:00, 2:30.
- Activate the selection with the ▸ key, and switch back and forth with the key ▴ and ▾.

Submenu INFO

Inputs >		
Picture >		
Display >		
Sound >		
Set Up >		
Info >	Current Temperature:	30.5
	Hardware version:	Rev. 03
	Software version:	V02e

5.0 Format Set Ups

5.1 Video Signal Source

In the DISPLAY menu the OSD offers seven different operating modes in order to optimally present the different signal sources and video formats on the 16:9 width format display.
With the help of the following descriptions you can select the most suitable mode which are indicated by the mode of operation of the display modes. The user zoom can also be utilised with PC signals.

4:3 mode

This mode presents a PAL 4:3 image in correct aspect ratio. Dark streaks are visible on the right and left margin of the image. PAL 4:3 images with 576 lines are converted into 480 visible lines and 640 visible pixels.

Full Screen (Fit-to-Screen)

This mode enlarges or reduces input formats in horizontal and vertical direction so that the image is always presented as "fit-to-screen".

Video 16:9 Mode

This mode presents a 16:9 image in such a fashion that no dark streaks are visible on the upper and lower margin of the image. As a result of the scaling in vertical direction, a portion of the 576 lines is not symmetrically presented on the upper and lower margin of the image.

ZOOM

The manual conversion from the 4:3 mode into the Zoom mode stretches the image in a vertical and horizontal direction by ca. 20% by means of the Full Screen presentation. As a result, the black streaks on the lower and upper margin of the image, which appear in 4:3 format in the presentation of Cinescope movies, are reduced to a minimum or disappear entirely.

USER ZOOM MODE

The user mode zoom enables a reduction or an enlargement of the image size in a vertical and horizontal direction. The Set Up range varies from 40% to 140% of the original image size.

Video NLS (Non-Linear Scaling)

This mode scales the input signal "fit-to-screen" in a horizontal and vertical direction as well as in a non-linear fashion; i.e., the image contents are illustrated in the middle of the screen like the original, and a stronger scaling takes place on the margin.

Auto (Automatic)

This mode automatically scales the input signal in a horizontal and vertical direction on a fit-to-screen display. It recognises 16:9 movie material, and scales the material with the predetermined factors.

6.0 Error Analysis and Possible Recovery

ERROR
Complete display failure, although the mains plug is inserted and the device is turned on with the mains switch and remote control.

POSSIBLE CAUSE
- Power supply interrupted
- Defect fuse
- Defect mains cable

POSSIBLE RECOVERY
- Call Service Hotline

ERROR
Dark display

POSSIBLE CAUSE
- Contrast setting too low
- No input signal

POSSIBLE RECOVERY
- Correctly adjust brightness and/or contrast
- Correctly connect cable, check video source

ERROR
No colour or excessive colours

POSSIBLE CAUSE
- No signal from the computer for the missing colour
- Poor signal connection

POSSIBLE RECOVERY
- Check computer/video source
- Correctly connect cable

ERROR
No/poor vertical and/or horizontal synchronisation.

POSSIBLE CAUSE
- Sync lines have a poor connection
- Poor signal connection

POSSIBLE RECOVERY
- Screw in the utilised plug-and-socket connectors correctly.
- Check the individual connection lines

ERROR
The remote control does not function.

POSSIBLE CAUSE
- The batteries are empty.
- There is an obstruction between the remote control and the sensor.
- The remote control is beyond its operating range.

POSSIBLE RECOVERY
- Insert new batteries.
- Remove the obstruction between the remote control and the sensor.
- Operate the remote control in the stated range.

ERROR
The displayed image is too dark.

POSSIBLE CAUSE
- The display screen quality is not adjusted properly.

POSSIBLE RECOVERY
- Correct the image brightness and contrast.

ERROR
No signal appears on the screen.

POSSIBLE CAUSE
- You have selected the false input channel.
- The display cannot function with the provided signals.

POSSIBLE RECOVERY
- Switch to the appropriate input.
- Make the signal available in the proper format.

ERROR
Individual letters are not displayed (PC mode).

POSSIBLE RECOVERY
- Adjust the proper phase position.
- Check the setting of the image width.
- Execute Auto Adjust.

ERROR
Horizontal streaks in TV or video signals

POSSIBLE CAUSE
- Signal source placed in front of the display.
- Video cable shielding is insufficient.

POSSIBLE RECOVERY
- Always place signal sources on the side of or behind the display.
- Utilise only high-quality signal cable with greater screen damping.

Repairs

⚠ WARNING

Do not repair the display yourself! In this case your warranty expires in addition to your personal endangerment.

Should an error appear which cannot be repaired on-site, please contact the Service Hotline. On account of the modular design of the display, it is possible to repair your device quickly and at low cost. Any intervention into the device which exceeds operator-specific external adjustments, in particular the dismantling of protective coverings, is reserved solely for personnel trained for this purpose, in compliance with VBG4 (Accident Prevention Regulations, workplace safety).

Of course, complete displays can be sent back to the manufacturer for repair. Should you do this, please include the following information on your display:

1. Description of the defect

Describe the exact symptoms on your repair order as thoroughly as possible. Should the problem arise periodically, please include this in your error description.

2. Specific statements

Should your device have been, for instance, exchanged or modified, please indicate this in any return shipment. In the event of an already undertaken modification, should it be desired that this modification is retained, please also indicate this.

3. Invoicing

Please indicate the desired type of invoicing, i.e. let us know whether an estimate with or without cost release is desired on your part before repair of the device. Should no details be provided for this purpose, the repairs will be effected according to standard procedure.

Cleaning the Display and Housing

Dust and other dirt which gather on the display impair the image quality and should be removed from time to time.

⚠ CAUTION

Pull the mains plug before beginning cleaning.

Cleaning the plasma display can be split up into different areas:

1. Display surface

Moisten a clean cloth (do not soak) with an environmentally friendly glass cleaner. It contains spirits as active substance (up to 98%) and biologically degradable surface-active agents. Glass cleaner removes fingerprints, fatty dirt, dust and nicotine deposits. In order to prevent formation of streaks, clean the display with circular motions. Dry the display with a second, clean cloth.

2. Housing surface

It is recommended to rid the housing of dust and other dirt beforehand with a feather duster. The feather duster must be comprised of non-conductive material such as plastic or wood. Moisten a clean cloth (do not soak) with a liquid such as environmentally friendly glass cleaner and/or an antistatic plastic cleaner. It cleans the surface and additionally protects against electrostatic charging, which is one of the main reasons for the dust gathering on the display. In accordance with EU recommendation, this cleaning agent contains less than 5% anionic surface-active agents, alcohol and some scents. In accordance with GefStoff V [hazardous materials ordinance], these cleaning agents are designated as inflammable substances; however, according to the VbF [inflammable liquids ordinance], they are not combustible.

Declaration of Return

The supplier is aware of the growing importance of environmental protection and waste prevention. Even during the beginning of a product development considerable emphasis is placed on effective utilisation of material, reusable parts and materials, and easy dismantling at the end of the product lifetime. The modular design of the colour plasma display and the materials utilised enable easy separation in sensible portions, which represents a basic prerequisite for waste separation and recycling.
We guarantee to take the colour plasma display back from you at the end of the product lifetime. We ensure that all parts are recycled in an adequate manner, or will be brought to a waste disposal site for the protection of our environment. Please contact our service department for more extensive information.

Technical Specifications

Product Attributes

The colour plasma display complies with the following specifications, when
- the power supply lies within the specified range,
- the display has been in operation for at least 30 minutes,
- the timing, video input and the display size are specified as follows.

Where no other information is effected, all details in these technical specifications have been measured in accordance with the VESA Standard Display Specifications and Test Procedures.

- OSD and IR remote control
  Clearly coherent and well-designed menus and the operation of the IR remote control make the operation of the diverse input sources as easy as child's play. The following menus are available for you:Info, Sound, Picture, Display, Inputs Set Up The most important functions such as channel switching, format switching, switching of TV / VGA mode and volume are provided directly on the remote control.

- Audio equaliser
  In addition to volume and balance control, 5 OSD slide controls (120 Hz, 500 Hz, 1.5 kHz, 5 kHz, 10 kHz) for sound influence are available to you.

- Multisync VGA display
  The multisync technology enables operation on different PC formats – from VGA to XGA, up to a maximum clock frequency of 95 MHz. The auto-adjust function and the parameter storage ensure that adjustment on a new format is easy, and that a format which has been adjusted once is automatically recognised and optimally presented in the best image quality when turning on the device the next time.

- Digital comb filter
  In order to increase the horizontal resolution in a standing, vertical line structure, the mixed signals for the colour and black-and-white image must be separated. The digital comb filter provides the desired signal separation through the multiple filtering. A clear separation enhances the horizontal resolution in the presentation of vertical structures, and guarantees clear colour transitions even in the presentation of high-resolution images.

- 8-bit digital signal processing
  The digital signal processing functions with 8 bits per colour. This resolution guarantees precise playback without loss of information or colour. The result is a natural image with fine details and 256 grey scales.

- Adjustable audio inputs and outputs
  The volume level of the audio output is adjustable in the "Sound" menu.

- Gamma correction
  The non-linear gamma correction increases the number of perceptible grey scales, and prevents image saturation in the upper range.

- Colour temperature control
  Individual colour temperature control guarantees precise colour rendition.

- Stand-by
  The display can be switched to stand-by mode per infrared remote control, which reduces the power consumption to only 5 W. When it is activated, the stand-by mode is indicated by a brightly glowing red LED on the front side of the device.

- Multistandard TV tuner
  The multistandard TV tuner (PAL/SECAM) receives signals from terrestrial antennas or from a cable network. The input frequency range varies from 47 to 861 MHz. You can also connect your satellite receiver output here or on the SCART input.

- Teletext system
  The videotext system offers brand-new information and new developments concerning sports events, weather forecasts and politics.

- Progressive scan through de-interlacing
  Digital signal processing transforms the received fields into pictures by means of internal de-interlacing, and thus achieves precise image presentation on a 16:9 display screen. The switching between 50 Hz and 60 Hz optimises rapid motion sequences and reduces the image flickers in the presentation of very bright images.

1. DESCRIPTION

The S42SD-YD06 is a 42-inch wide full color plasma display module with a resolution of 852(H) × 480(V) pixels. The display module includes the Plasma Display Panel(PDP), the Panel driving electronics, the Logic Control Board, and the SMPS(PSU).

2. FEATURES

- Wide aspect ratio(16:9) 42 inch diagonal display screen. The display area is 932.94㎜ wide and 532.80㎜ high.
- Slim and light weight. The display module is 60㎜ in depth and weights only approx.18㎏ exclusive of power supply(power supply = approx. 2.64kg).
- 16.77 million colors by combination of 8 bits R,G and B digital data.
- High Luminance, High contrast, Wide viewing angle. The screen has a white peak Luminance of typical 650 cd/㎡, contrast of typical 1,000:1 and a viewing angle of greater than 160° comparable to those of CRTs.

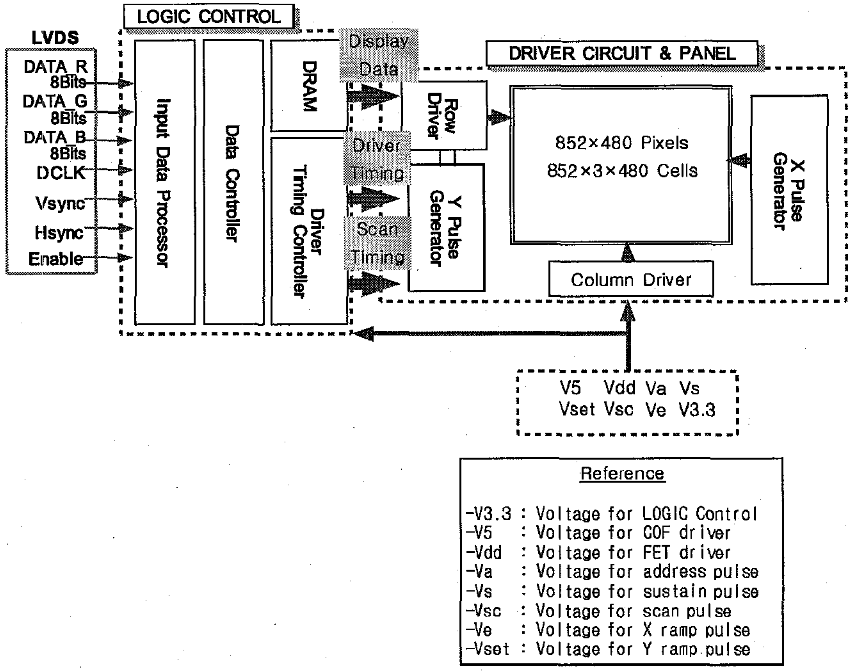
3. PRODUCT NAME AND MODEL NUMBER

- Product name : 42-inch Full Color Plasma Display Module3 (abbreviation : PDP Module3)
- Model number : S42SD-YD06

4. FUNCTION OUTLINE

- The plasma display Module has an APC(Automatic Power Control) function which restricts power consumption within the certain value with regard to each display load ratio.
- The plasma display Module is operated by following digital video signals; Vertical synchronous signal, Horizontal synchronous signal, Enable signal and 8bits data signal of each R,G, and B color. All signals are based on LVDS level.
- The plasma display Module is operated at 50Hz or 60Hz frame rate. An external frame rate conversion is required in order to display the other formats.
- The plasma display Module requires 8 types of input power voltages; voltage for LOGIC, voltage for COF driver IC, voltage for gate driver, voltage for sustain, erase, address, set and scan.
- The plasma display Module is operated at progressive signal only. An external progressive scan conversion is required in order to display the other formats.
- The plasma display Module requires 90~240V, 50~60Hz of input power voltage

5. BLOCK DIAGRAM


LVDS
DATA_R 8Bits
DATA_G 8Bits
DATA_B 8Bits
DCLK
Vsync
Hsync
Enable
LOGIC CONTROL
Input Data Processor
Data Controller
DRAM
Driver Timing Controller
Display Data
Driver Timing
Scan Timing
DRIVER CIRCUIT & PANEL
Row Driver
Y Pulse Generator
852×480 Pixels
852×3×480 Cells
X Pulse Generator
Column Driver
V5 Vdd Va Vs
Vset Vsc Ve V3.3

Reference

-V3.3 : Voltage for LOGIC Control
-V5 : Voltage for COF driver
-Vdd : Voltage for FET driver
-Va : Voltage for address pulse
-Vs : Voltage for sustain pulse
-Vsc : Voltage for scan pulse
-Ve : Voltage for X ramp pulse
-Vset : Voltage for Y ramp pulse

Display Cell Arrangement

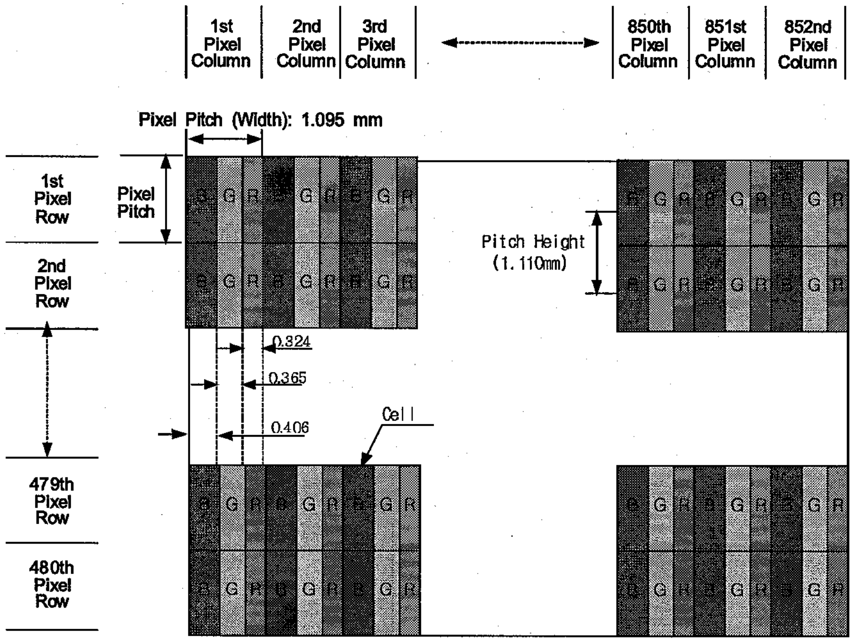
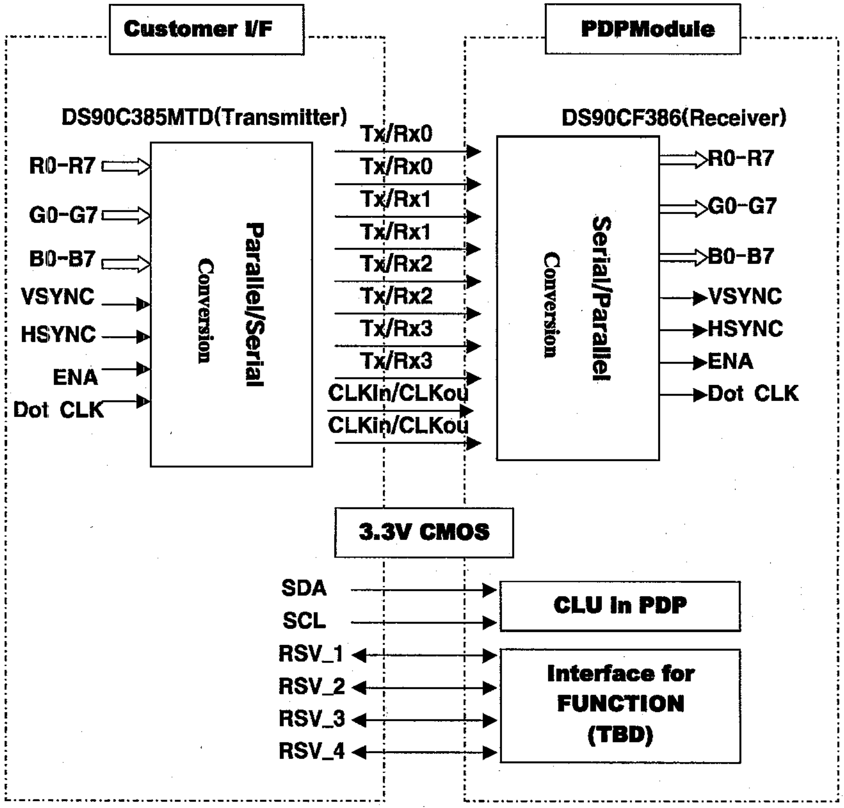

1st Pixel Column
2nd Pixel Column
3rd Pixel Column
850th Pixel Column
851st Pixel Column
852nd Pixel Column
Pixel Pitch (Width): 1.095 mm
1st Pixel Row
2nd Pixel Row
479th Pixel Row
480th Pixel Row
Pixel Pitch
Pitch Height (1.110mm)
0.324
0.365
0.406
Cell
B
G
R

Figure Display Cell rrangement

Interface Signal Specifications

Configuration Context


Customer I/F
PDPModule
DS90C385MTD(Transmitter)
DS90CF386(Receiver)
Parallel/Serial Conversion
Serial/Parallel Conversion
R0-R7
G0-G7
B0-B7
VSYNC
HSYNC
ENA
Dot CLK
Tx/Rx0
Tx/Rx0
Tx/Rx1
Tx/Rx1
Tx/Rx2
Tx/Rx2
Tx/Rx3
Tx/Rx3
CLKIn/CLKou
CLKIn/CLKou
R0-R7
G0-G7
B0-B7
VSYNC
HSYNC
ENA
Dot CLK
3.3V CMOS
SDA
SCL
RSV_1
RSV_2
RSV_3
RSV_4
CLU In PDP
Interface for FUNCTION (TBD)

Interface Function Specifications (input data and display processing)

- 852-dot data signals are inputted to this product to display data.
- The Video signal and control signal input section uses a low voltage differential signaling (LVDS) interface.
- An I2C bus serial data interface is used for the communication between Image of Customer side and the CLU (Control LOGIC Module) of this PDP Module.

Input Signal Definition

No	Item	Signal name		Q	I/O	Method	Definition
1	Display Signal	Video Signal	RXIN0- RXIN0+ RXIN1- RXIN1+ RXIN2- RXIN2+ RXIN3- RXIN3+	1 1 1 1 1 1 1 1	Input	LVDS Differentials	Differential serial data signal. Input video and timing signals after differential serial conversation using a dedicated transceiver. The serial data signal is transmitted seven times faster than the base signal.
		Dot Clock	RXCLKIN- RXCLKIN+	1 1	Input	LVDS Differential	Differential clock signal. Input the clock signal after differential conversation using a dedicated transceiver. The clock signal is transmitted at the same speed as the base signal.
2	MPU Communication	Communication	SDA SCL	1 1	Input	LVTTL (I2C)	I2C bus serial data communication signal. Communication with the CLU (Control Logic Module) of this product is enabled.
		Control	RSV1 RSV2 RSV3	1 1 1	Input	LVTTL	These are reserved pins for future use. Function for each line is TBD.
			PDP_GO	1	Input	LVTTL	This signal makes SMPS gives voltage output such as 3.3V, 5V, 8.6V, Va, Vaudio etc. from PFC block.

LVDS Signal Definition and Function

A video signal (display data signal and control signal) is converted from parallel data to serial data with the LVDS transmitter and further converted into four sets of differential signals before inputted to this PDP Module. These signals are transmitted seven times faster than the dot clock signals. The dot clock signal is converted into one set of differential signals.
The LVDS signal definitions and functions are as follows (in Italic)::

Interface Signal Function			
Symbol	I/O	Function	Remarks
RxIN0-	I	Display Data Signal: R0, R1, R2, R3, R4, R5, G0	LVDS signal
RxIN0+	I		LVDS signal
RxIN1-	I	Display Data Signal: G1, G2, G3, G4, G5, B0, B1	LVDS signal
RxIN1+	I		LVDS signal
RxIN2-	I	Display Data Signal: B2, B3, B4, B5, Hsync, Vsync, BLANK	LVDS signal
RxIN2+	I		LVDS signal
RxIN3-	I	Display Data Signal and Control Signal: R6, R7, G6, G7, B6, B7, PARITY	LVDS signal
RxIN3+	I		LVDS signal
RxCLKin-	I	Dot Clock Signal: CLK	LVDS signal
RxCLKin+	I		LVDS signal
SDA	I	I2C serial data	3.3V CMOS
SCL	I	Clock signal for SDA	3.3V CMOS
RSV1/2/3/4	I/O	Reserved interface signals (Note 1)	3.3V CMOS

Note 1: RSV1, RSV2, RSV3 and RSV4 are reserved for Customer's interface needs.
For example, signals are used to control power-on/off sequence.
These signals could be inputed or outputed to a PDP Module.

Video Signal Definition and Function

The table below indicates the definitions and functions of input video signals before LVDS conversion.

Interfaces Signal Functions		
Symbol	**Function**	**Remarks**
R7 to R0	8 bits red video signal (note 1)	Display data signal: R7: MSB*, R0: LSB**
G7 to G0	8 bits green video signal (note 1)	Display data signal: G7: MSB*, G0: LSB**
B7 to B0	8 bits blue video signal (note 1)	Display data signal: B7: MSB*, B0: LSB**
HSYNC	Horizontal synchronous signal	This signal specifies the data period for one horizontal line. Control of the next line begins at the rising edge of Hsync.
VSYNC	Vertical synchronous signal	Timing signal that controls the start of the screen. Control of the next screen begins at the rising edge of Vsync.
Dot CLK	Clock for video signal	Latch the video signal at falling edge.

* MSB: Most Significant Bit (Highest Intensity Bit)
**LSB: Least Significant Bit (Lowest Intensity Bit)
Note 1: The RGB signal may be compensated with Inverse γ circuit (E/D (=Error Diffusion) must be included) before inputted to the PDP Module. In order to obtain good characteristic of low level's gray scale, inverse γ correction and E/D process are advisory to be performed after inputted to the PDP Module.

Electrical Condition of Interface Signals

Maximum Ratings

Common conditions : Ta = 25℃, Vcc = 3.3V

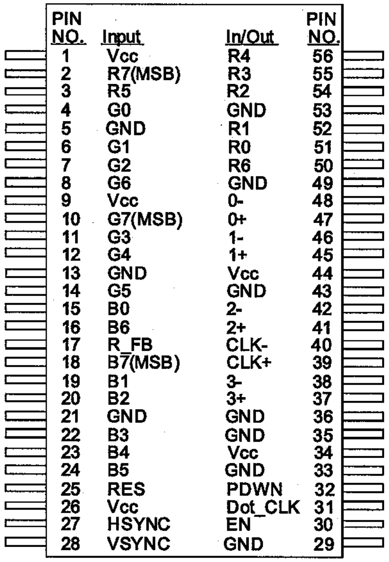
Absolute Ratings						
Item			**Parameter**	**Symbol**	**Ratings**	**Module**
Input Signals	LVDS	Rx0-/+, Rx1-+, Rx2-/+, Rx3-/+, CLKin-/+	Input Voltage	Vi	-0.3~3.6	V
			Input Current	Ii	-	mA
	3.3V CMOS	SDA, SCL, PDP_GO, RSV1(TBD)	Input Voltage	Vi	-0.3~3.6	V
			Input Current	Ii	-15	mA
Output Signals	3.3V CMOS	RSV1(TBD), PDP_GO	Output Voltage	Vo	-0.3~3.5	V
			Output Current	Io	±20	mA

Electrical Characteristics

Common conditions : Ta =25℃, Vcc = 3.3V

Electrical Characteristics							
Signal	**Item**	**Symbol**	**Conditions**	**Min.**	**Typ.**	**Max.**	**Module**
LVDS	High level input voltage	V_{th}	V_{CM}=1.2V	-	-	100	mV
	Low level input voltage	V_{tl}	V_{CM}=1.2V	-100	-	-	mV
	Input current	I_{in}	V_{IN}=+2.4/GND	-10	-	+10	μA
I2C	Input Voltage	V_{ih}		0.7*Vcc	-	Vcc+0.5	V
		V_{il}		-0.5	-	0.3*Vcc	V
	Input Capacitance	V_{in}	-	-	-	8	pF
	Output Voltage	V_{oh}	I_{oh} = 8 mA	2.4	-	-	V
		V_{ol}	-	-	-	0.4	V
	Output Current	I_{ol}	-	-	-	10	mA
3.3V CMOS	High level input voltage	V_{ih}	-	2.0	-	-	V
	Low level input voltage	V_{il}	-	-	-	0.8	V
	Input current	I_{i}	V_{I}=Vcc or GND	-	-	±5.0	μA
	High level output voltage	V_{oh}	Io = -1 mA	2.4	-	-	V
	Low level output current	V_{ol}	I_{o} = 1 mA	-	-	0.4	V

LVDS Transmitter Pin Assignment



PIN NO.	Input	In/Out	PIN NO.
1	Vcc	R4	56
2	R7(MSB)	R3	55
3	R5	R2	54
4	G0	GND	53
5	GND	R1	52
6	G1	R0	51
7	G2	R6	50
8	G6	GND	49
9	Vcc	0-	48
10	G7(MSB)	0+	47
11	G3	1-	46
12	G4	1+	45
13	GND	Vcc	44
14	G5	GND	43
15	B0	2-	42
16	B6	2+	41
17	R_FB	CLK-	40
18	B7(MSB)	CLK+	39
19	B1	3-	38
20	B2	3+	37
21	GND	GND	36
22	B3	GND	35
23	B4	Vcc	34
24	B5	GND	33
25	RES	PDWN	32
26	Vcc	Dot_CLK	31
27	HSYNC	EN	30
28	VSYNC	GND	29

DS90C385T

Connector Specifications

Pin No.	Signal Name	Pin No.	Signal Name
1	RxIN0-	2	GND
3	RxIN0+	4	SCL (I2C)
5	RxIN1-	6	GND
7	RxIN1+	8	SDA (I2C)
9	RxIN2-	10	GND
11	RxIN2+	12	RSV1
13	RxCLKIN-	14	PDP_GO
15	RxCLKIN+	16	N.C
17	RxIN3-	18	N.C
19	RxIN3+	20	GND

* Connector: DF13-20DP-1.25V (Maker: HIROSE DENKI)
* Housing: DF13-20DS-1.25C (Maker: HIROSE DENKI)
* Contact: DF-2630SCF (Maker: HIROSE DENKI)
* **Note 1:** RSV1, RSV2, and RSV3 are left for future use. For SDI PDP Module, SDI & **BEKO** will decide signal definition and specification after discussion.

AC INPUT (CN8004) CONNECTOR
Part number : JST B2P3-VH

Pin #	Signal
1	AC Line
2	N.C
3	AC Neutral

DC OUTPUT CONNECTORS

1) IMAGE_ANALOG (CN8001) CONNECTOR
Part number : JST B6B-EH-A

Pin#	Signal
1	5V_SCV
2	5V_SCV
3	5V_SCV
4	GND
5	GND
6	GND

2) IMAGE_DIGITAL (CN8002) CONNECTOR
Part number : JST B13B-EH-A

Pin#	Signal
1	9V_STBY
2	9V_STBY_SW
3	12V_SCV
4	5V_STBY_SW
5	3.3V_STBY_SW
6	N.C
7	N.C
8	GND
9	Power OK
10	Thermal DET
11	PWR ON/OFF
12	N.C
13	N.C

POWER_OK : signal indicating all outputs are being operated as the specification

3) Audio (CN8002) CONNECTOR
Part number : JST B7B-EH-A

Pin#	Signal
1	VSND_POS
2	VSND_POS
3	GND
4	GND
5	GND
6	9V_STBY
7	DC_PROT

4) Logic (CN8009) CONNECTOR
Part number : Molex 35312-10

Pin#	Signal
1	D3.3V1
2	D3.3V1

3	GND
4	GND
5	D5V
6	GND
7	N.C
8	N.C
9	Vs_ON
10	GND

5) X Drive (CN8007) CONNECTOR

Part number : Molex 35313-09

Pin#	Signal
1	D5V
2	Vg
3	GND
4	GND
5	Ve
6	GND
7	GND
8	Vs
9	Vs

6) Y Drive (CN8008) CONNECTOR

Part number : Molex 35313-10

Pin#	Signal
1	D5V
2	Vg
3	GND
4	Vscan
5	GND
6	Vset
7	GND
8	GND
9	Vs
10	Vs

7) SD Buffer (CN8004) & HD Buffer (CN8005) CONNECTORS

Part number : Molex 35313-05

Pin#	Signal
1	Va
2	Va
3	N.C
4	GND
5	GND

OUTPUT PROTECTION

No damage and fire, smoke shall occur during faults

1) OVER VOLTAGE PROTECTION

The power supply shall provide latch-mode over voltage protection

Output	Over Voltage Limit
Vs(+85V)	95V to 110V
Va(+75V)	85V to 100V
5V(+5V)	5.5V to 6.5V
3.3V(+3.3V)	3.45V to 4.5V

2) UNDER VOLTAGE PROTECTION

The power supply shall have shut down mode under voltage protection

Output	Under Voltage Limit
Vs(+85V)	55V to 60V
Va(+75V)	40V to 45V
Vset(+85V)	40V to 45V
Ve(+110V)	80V to 85V
Vscan(+75V)	60V to 65 V
3.3V(+3.3V)	2.0V to 2.7V
5V(+5V)	3.0V to 3.5V

3) SHORT CIRCUIT PROTECTION

If any outputs are shorted to the secondary return(R<0.03ohm), No damage shall result.

4) NO LOAD OPERATION

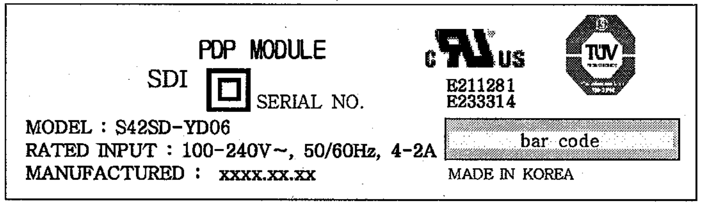
The power supply shall operate at no load condition.

No damage and hazardous condition will occur at no load condition

Label

Label Type

(Label for the PDP Module



PDP MODULE

SDI ☐ SERIAL NO.

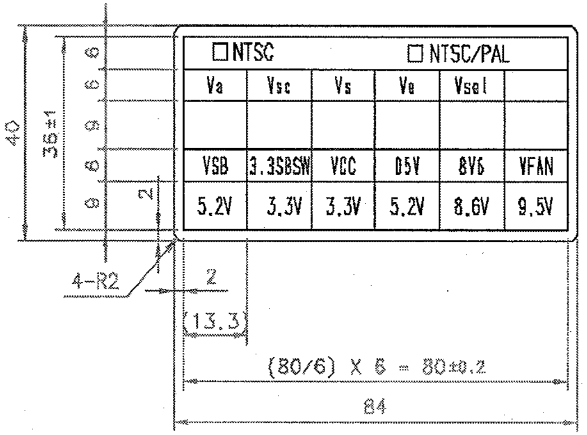
c US
E211281
E233314

MODEL : S42SD-YD06
RATED INPUT : 100-240V~, 50/60Hz, 4-2A
MANUFACTURED : xxxx.xx.xx

bar code

MADE IN KOREA

(2) Label for power specification

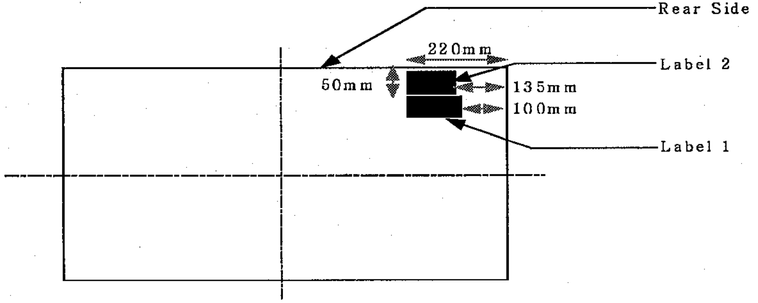


☐NTSC				☐ NTSC/PAL	
Va	Vsc	Vs	Ve	Vsel	
VSB	3.3SBSW	VCC	D5V	8V6	VFAN
5.2V	3.3V	3.3V	5.2V	8.6V	9.5V

Reference

- Vscan : Voltage for Display driver
- Vset : Voltage for Display driver
- Vs : Voltage for Display driver
- Ve : Voltage for Display driver
- Va : Voltage for Column driver

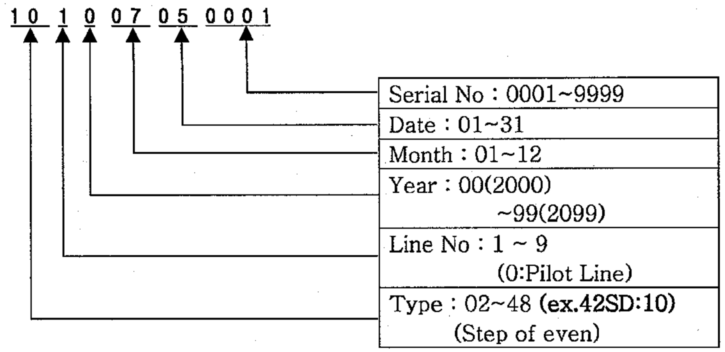
Label location



【 Notes 】

1. Label-1 is a label for the PDP Module.
2. Label-2 is a label for the power specification.

Serial No.


10 1 0 07 05 0001
Serial No : 0001~9999
Date : 01~31
Month : 01~12
Year : 00(2000) ~99(2099)
Line No : 1 ~ 9 (0:Pilot Line)
Type : 02~48 (ex.42SD:10) (Step of even)

WARNING / CAUTION / NOTICE

TO PREVENT POSSIBLE DANGER, DAMAGE, AND BODILY HARM, PLEASE CONSIDER AND OBSERVE ALL WARNINGS AND CAUTIONS CONTAINED IN THIS PARAGRAPH.

Warning

If you do not consider the following warnings, it could result in death or serious injury

(1) The S42SD-YD06 Module is controlled by high voltage about 350V. If you need to handle the Module during operation or just after power-off, you must take proper precautions against electric shock and must not touch the drive circuit portion and metallic part of S42SD-YD06 Module within 5 minutes.
The capacitors in the drive circuit portion remain temporarily charged even after the power is turned off. After turning off the power, you must be sure to wait at least one minute before touching the Module. If the remain voltage is strong enough, it could result in electric shock.

(2) Do not use any other power supply voltage other than the voltage specified in this product specifications. If you use power voltage deviated from the specifications, it could result in product failure.

(3) Do not operate or install under the deviated surroundings from the environmental specification set for the below; in moisture, rain or near water-for example, bath tub, laundry tub, kitchen sink; in a wet basement; or near a swimming pool; and also near fire or heater - for example, near or over radiator or heat resistor; or where it is exposed to direct sunlight; or somewhere like that. If you use the S42SD-YD06 Module in places mentioned above, it could result in electric shock, fire hazard or product failure.

(4) If any foreign objects (e.g. water, liquid and metallic chip or dust) entered the S42SD-YD06 Module, the power supply voltage to the S42SD-YD06 Module must be turned off immediately. Also, never push objects of any kind into the S42SD-YD06 Module as they may touch dangerous voltage point or make short circuits that could result in fire hazard or electric shock.

(5) If smoke, offensive smell or unusual noise should come from the S42SD-YD06 Module, the power supply voltage to the S42SD-YD06 Module must be turned off immediately.
Also, when the S42SD-YD06 screen fails to display any picture after the power-on or during operation, the power supply must be turned off immediately. Do not continue to operate the S42SD-YD06 Module under these conditions.

(6) Do not disconnect or connect the S42SD-YD06 Module's connector while the power supply is on, or immediately after power off. Because the S42SD-YD06 Module is operated by high voltage, and the capacitors in drive circuit remain temporarily charged even after the power is turned off. If you need to disconnect or reconnect it, you have to wait at least one minute after power off.

(7) Do not disconnect or connect the powerconnector by a wet hand. The voltage of the product may be strong enough to cause an electric shock.

(8) Do not damage the power cable of the S42SD-YD06 Module, also do not modify it.

(9) When the power cable or connector is damaged or frayed, do not use it.

(10) When the power connector is covered with dust, please wipe it out with a dry cloth before the power on.

Caution

If you do not consider the following cautions, it may result in personal injury or damage facilities.

(1) Do not set the S42SD-YD06 Module on an unstable place, vibrating place and inclined place. The S42SD-YD06 Module may fall or collapse, and it may cause serious injury to a person, and serious damage to the product.

(2) If you need to remove the S42SD-YD06 Module to another place, you must turn off the power supply and detach the interface cable and power cable from the S42SD-YD06 Module beforehand, and watch your steps not to step on the cables during the operation. If the cables are damaged during the transport, it may result in fire hazard or electric shock. Also if the S42SD-YD06 Module is dropped or fallen, it may cause a serious injury to a person.

(3) When you draw or insert the S42SD-YD06 's cable, you must turn off the power supply and do it (with) holding the connector. If you forcibly draw the cable, the electric wire in the cable can be exposed or broken. It may result in fire hazard or electric shock.

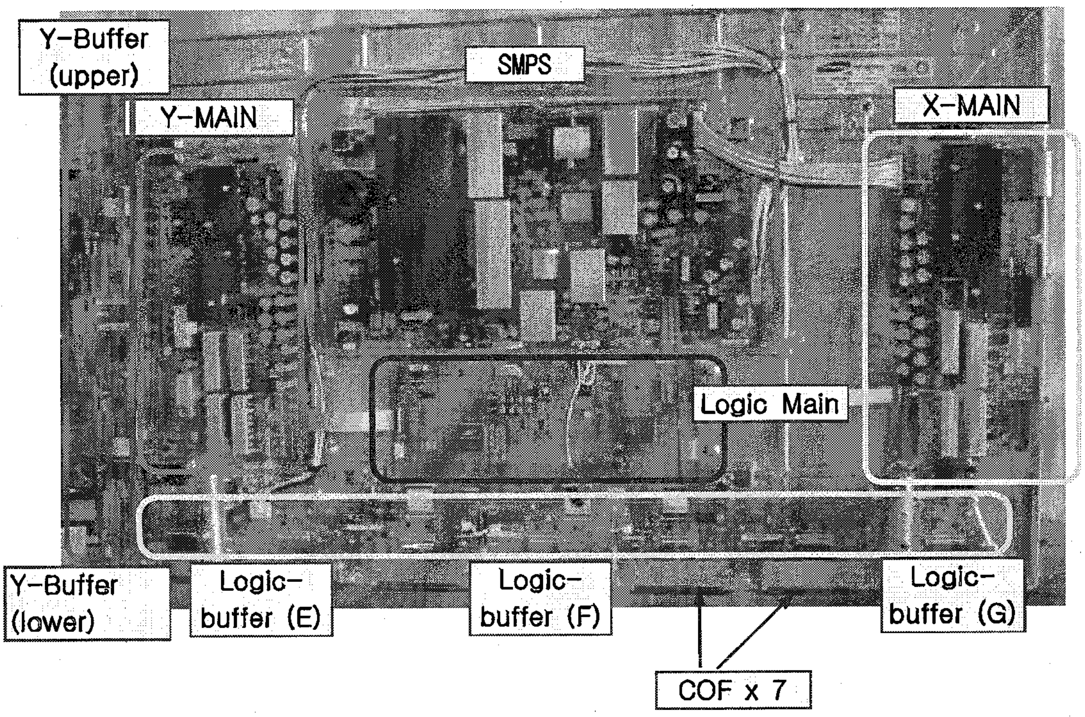
(4) When you carry the S42SD-YD06 Module, it should be done with at least two workers in order to avoid any unexpected accidents.

(5) The S42SD-YD06 Module has a glass-plate. If the S42SD-YD06 Module is inflicted with excessive stress - for example; shock, vibration, bending or heat-shock, the glass plate could be broken. It may result in a personal injury. Also, do not press or strike the glass surface.

(6) If the glass panel was broken, do not touch it with bare hand. It may result in a cut injury.

(7) Do not place any object on the glass panel. It may be the cause of the scratch or break of the glass panel.

(8) Do not place any object on the S42SD-YD06 Module. It may result in a personal injury due to fall or drop.



Function of PBA

■.**SMPS(Switching Mode Power Supply)** : A supplier which supplies voltage and current to operate assemblies mounted to each board and Panel.

■.**X Driver Board** : According to the timing provided from Logic board, switches FETs and generates driving waveform which is provided to X electrode of Panel through Connector.

■.**Y Driver Board** : According to the timing provided from Logic board, switches FETs and generate driving waveform which is provided to Y electrode of Panel sequentially through Scan Driver IC of Scan Buffer.

■.**Logic Main Board** : Processes image signal and generates Address driving output signal & XY driving signal

■.**Logic Buffer Board(E,F)** : Transfers data signal and control signal to COF.

■.**Scan Buffer(Upper,Lower)** : A board allows scan waveform to Y terminal, which is consisted of Upper Board and Lower Board. **(Y-Buffer(Upper,Lower))**

■.**AC Noise Filter** : It blocks Noise(Low Frequency) and Surge inflowed from AC LINE, and affects (EMC,EMI) safety requirement according to AC Filter.

■.**COF(Chip on Flexible)** : It allows Va pulse to address electrode within address period and forms address discharge according to the electric potential difference between Va pulse and the Scan pulse allowed to Y electrode.
It is manufactured in COF form and one COF is consisted of four DATA Drive IC .

Repair Process

Receiving Module or B'd

Repairment

Aging in the condition of the defect
(Aging for 2 hrs covering PE-BAG)

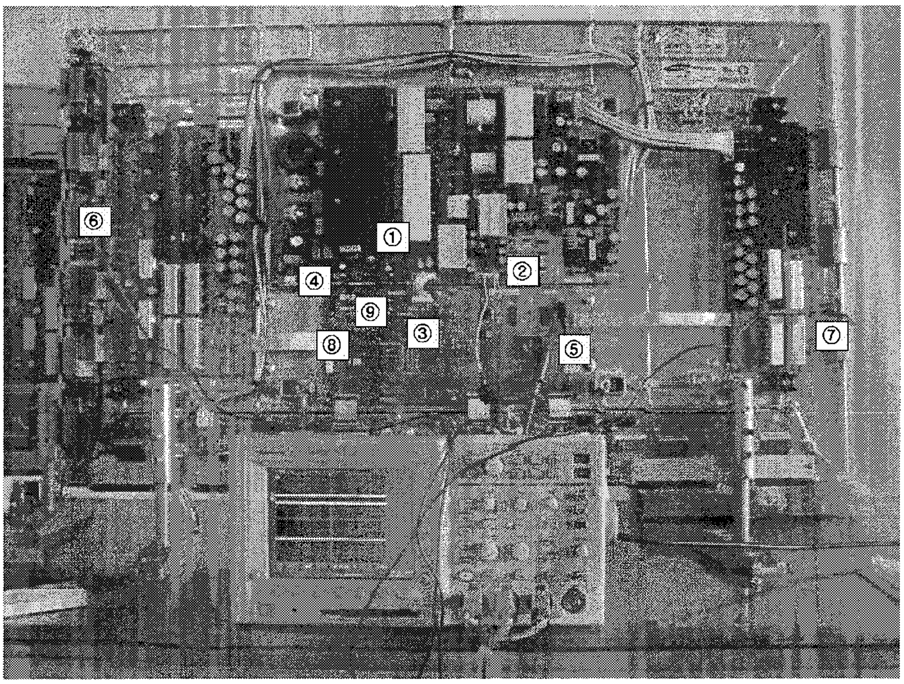
If there is any defect, wrap it up.

Sending to Customer.

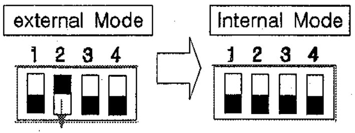
※ Caution
-. Use exiting 256K when changing Logic B'd
-. Adjust the Drive Waveform when changing Y-B'd
(Refer to how to adjust the waveform)
-. Check and see if the waveform is right enlarging a oscilloscope (Refer to Picture 1)
-. Adjust each Voltage when changing SMPS

※ Caution
-. Check **SW2001** (Setting into **External Mode**)
-. Check **Short-Bar(J8002)** in SMPS
BEKO : O (insert)
-. Remove JIG Relay S/W connector
-. Remove JIG AC socket

T/S method on No Picture and Abnormal Screen

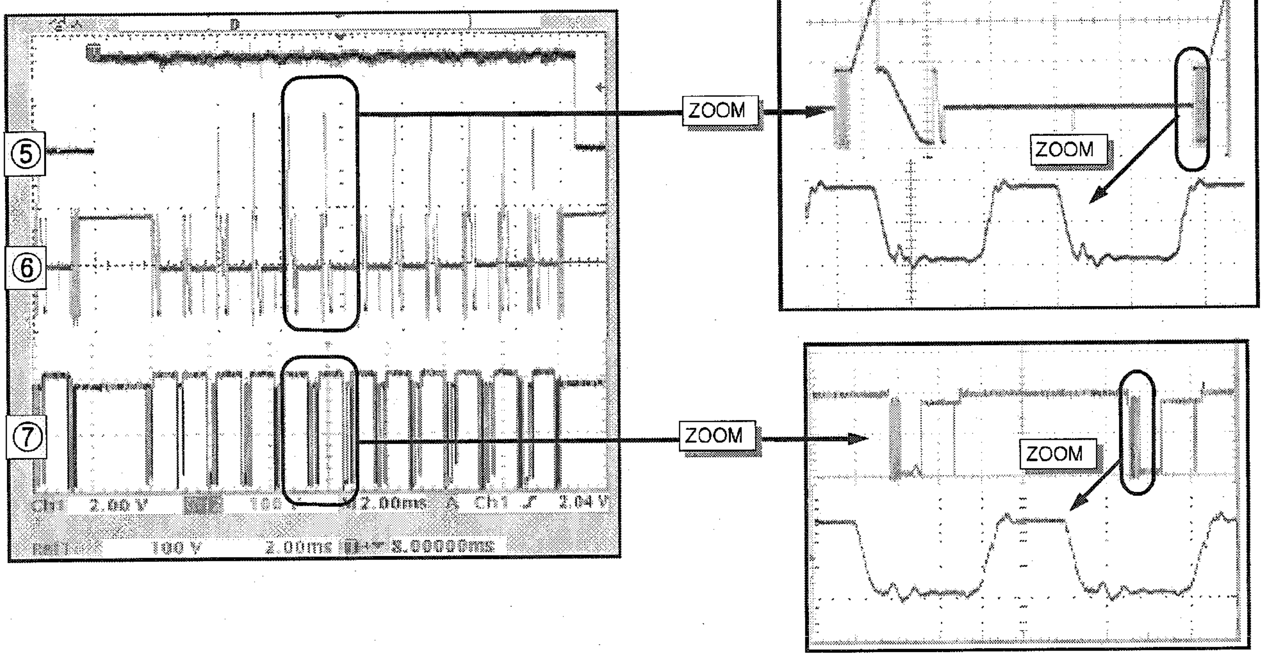


1) Preparation
①.Insert Short Bar(J8002) in SMPS
②.Connect Relay Jig S/W JIG
③.Change Logic B'd S/W into internal mode

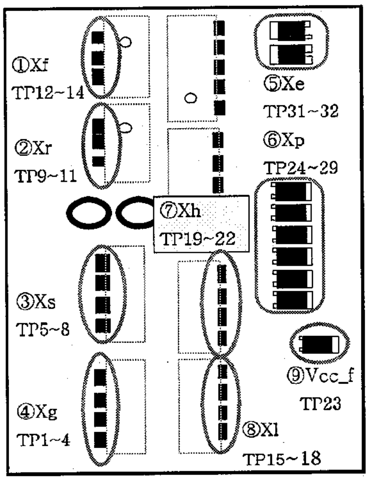


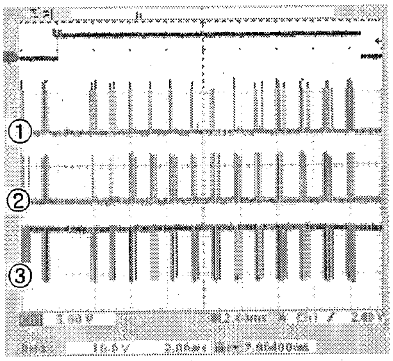
④.Insert JIG AC socke
※Oscilloscope
⑤.CH1 : V-SYNC (CN201)
⑥.CH2 : Y-output (OUT4)
⑦.CH3 : X-output (TP OUT)
⑧.Connect Key-scan B'd
2) Turn-On.
-.Turn on Power S/W
-.Check LED in Logic B'd(⑨)
-.Check waveform of X-B'd andY-B'd
[Refer to Picture 1]

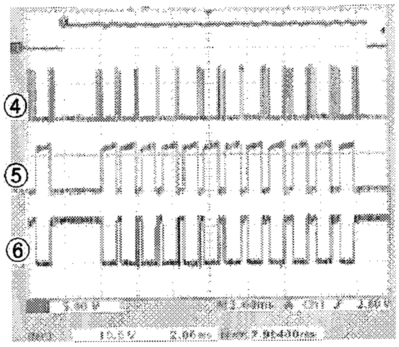
[Picture 1] Waveform of X-B'd, Y-B'd

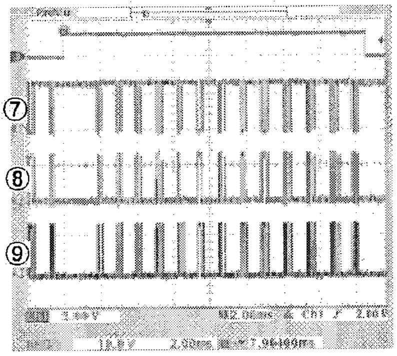


T/S method on abnormal waveform of X-B'd

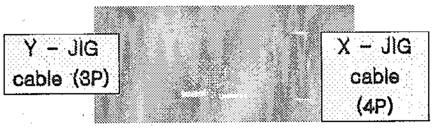

①Xf
TP12~14
②Xr
TP9~11
⑦Xh
TP19~22
③Xs
TP5~8
④Xg
TP1~4
⑤Xe
TP31~32
⑥Xp
TP24~29
⑨Vcc_f
TP23
⑧Xl
TP15~18







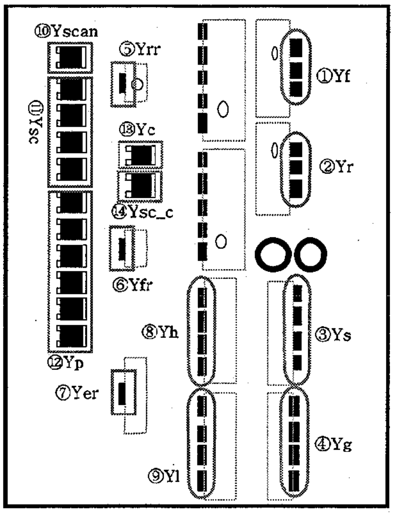
1. Preparation
   1).Connect SMPS with X-B'd using Jig Cable (only for Vcc(15V), VDD(5V), GND)

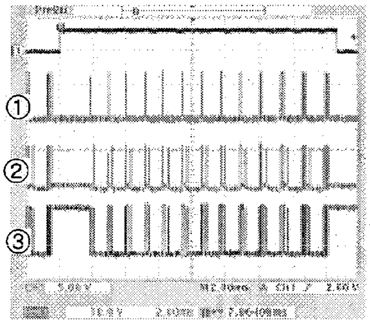

Y - JIG
cable (3P)
X - JIG
cable
(4P)

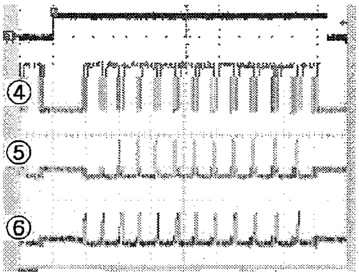
   2).Disconnect a cable between SMPS and Y-B'd and FFC between Logic B'd and Logic Buffer

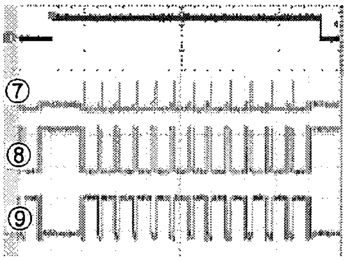
2. Turn-On
   1) After Turn-On, Check TP at ⑨ FET Gate if defective, check Q4048, ZD4001.
   2) Check TP(Test Point) at FET gate.
   3) Check FET and 314J relevant to abnormal waveform if different from normal
   4) Check Fuse(F4003) at Vs
   5) Compare real waveform with waveform of Picurt 1

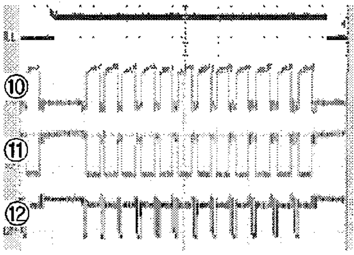
T/S method on abnormal waveform of X-B'd

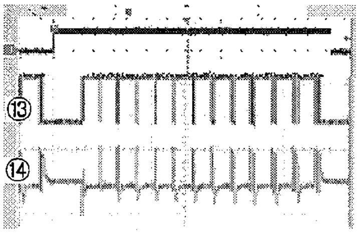

⑩Yscan
⑤Yrr
①Yf
⑪Ysc
⑬Yc
②Yr
⑭Ysc_c
⑥Yfr
⑧Yh
③Ys
⑫Yp
⑦Yer
④Yg
⑨Yl



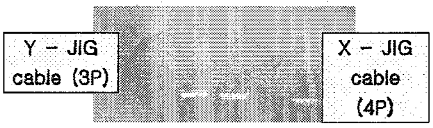








1. Preparation
   1).Connect SMPS with Y-B'd using Jig Cable (only for Vcc(15V), VDD(5V), GND)

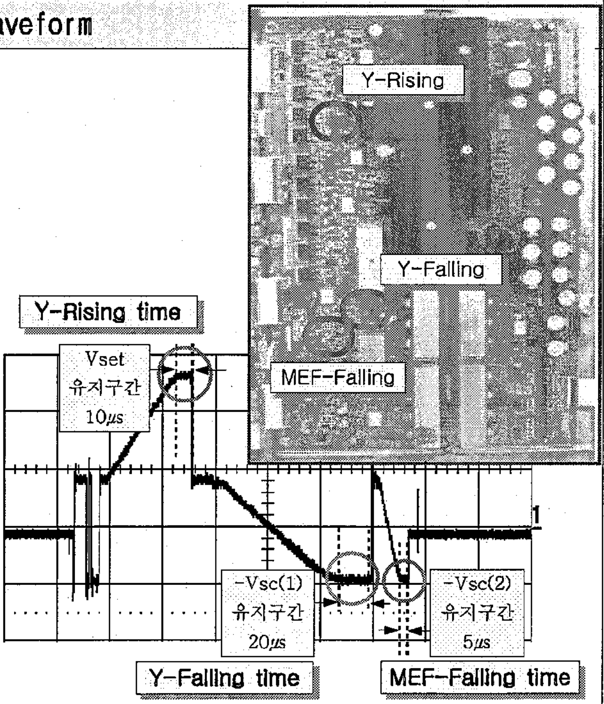

Y - JIG cable (3P)
X - JIG cable (4P)

   2).Disconnect a cable between SMPS and X-B'd and FFC between Logic B'd and Logic Buffer

2. Turn-On
   1) After Turn-On, Check TP at ⑬ FET Gate if defective, check Q5043, ZD5001.
   2) Check TP(Test Point) at FET gate.
   3) Check FET and 314J relevant to abnormal waveform if different from normal
   4) Check Fuse(F5003) at Vs.
   5) Compare real waveform with waveform of Picurt 1

How to adjust waveform

Waveform


Y-Rising
Y-Falling
MEF-Falling
Y-Rising time
Vset
유지구간
10㎲
1
-Vsc(1)
유지구간
20㎲
-Vsc(2)
유지구간
5㎲
Y-Falling time
MEF-Falling time

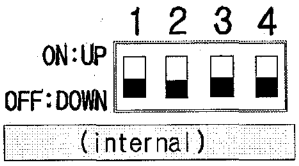
Procedure

1) Make Full White on Screen.

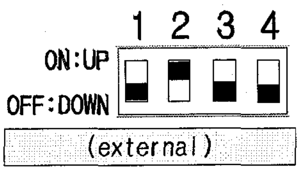
2) Observe waveform using Oscilloscope.

① check OUT4 TP in Y-buffer(upper).
Observe the waveform of the third waveform of 1TV-Field.
② Adjust the division of oscilloscope like the left picture
③ Adjust the period of Vset as 10㎲,
that of -Vsc(1) as 20㎲,
that of -Vsc(2) as 5㎲,
turning VR(Variable Resistor)
(only,when you adjust each period of -Vsc(1) & -Vsc(2) adjust Vertical Division of oscilloscope as '2V or 5V')
④ VR for Vset : VR5003 (Y_main)
VR for -Vsc(1) : VR5001 (Y_main)
VR for -Vsc(2) : VR5002 (Y_main)

2.4.1 Selecting internal or external & key-scan table


1 2 3 4
ON:UP
OFF:DOWN

(internal)


1 2 3 4
ON:UP
OFF:DOWN

(external)

address	Set	function
PG	00	NTSC
	20	PAL
80	01	pattern
81	FF	gray level
95	adjustable	X,Y color coordinate

address	Set	function
PG	11	NTSC
	31	PAL
31	adjustable	ERC (X)
32	adjustable	ERC (Y)
※. PG:00 → 12:3456 Setting		

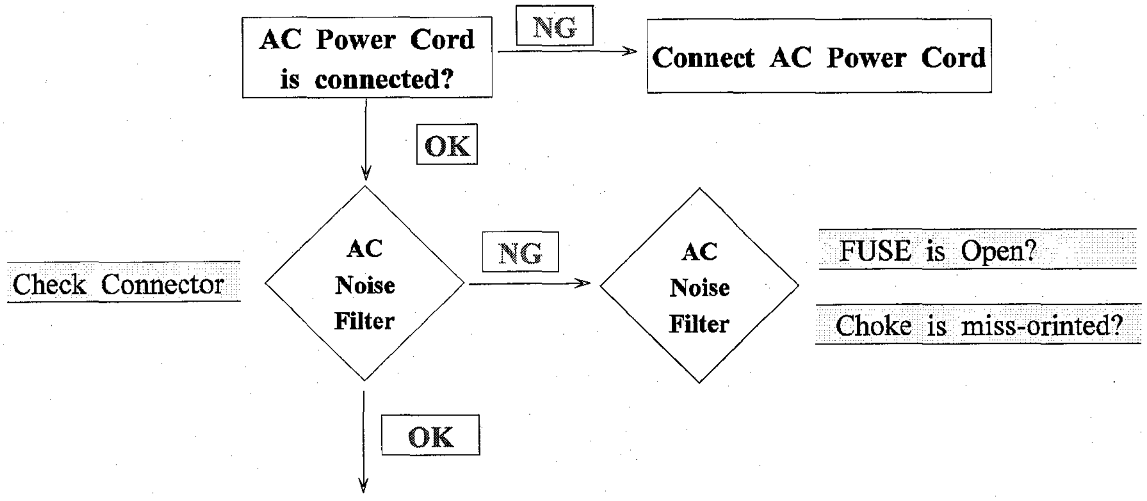
address	Range
31	07(08) , 0a(ob)
32	08(07or09), 0a(ob)

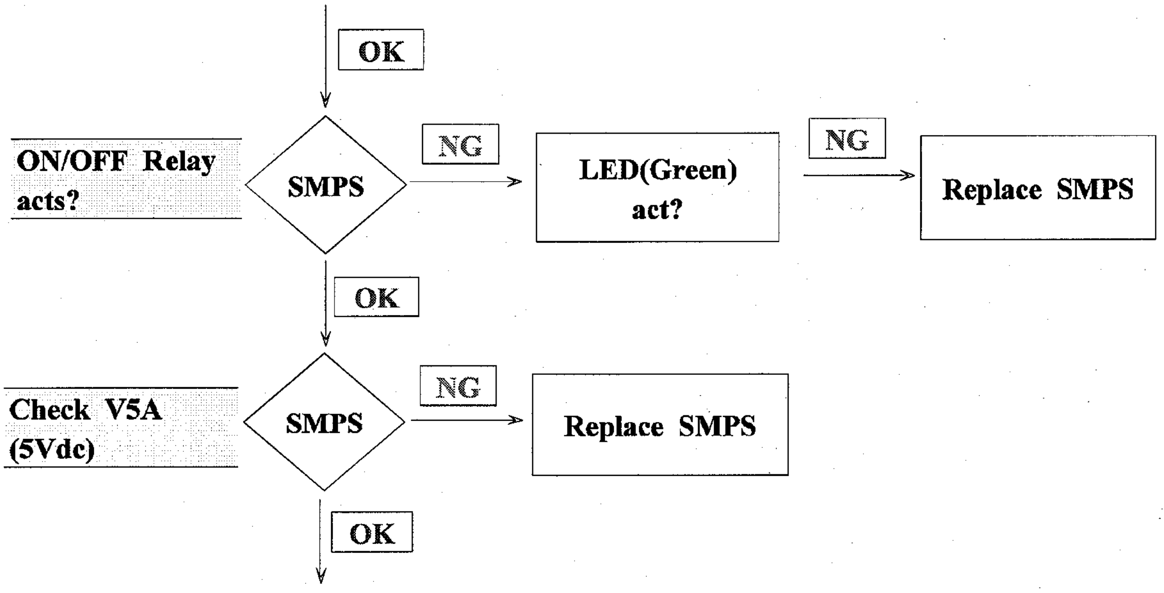
T/S method of actual cases

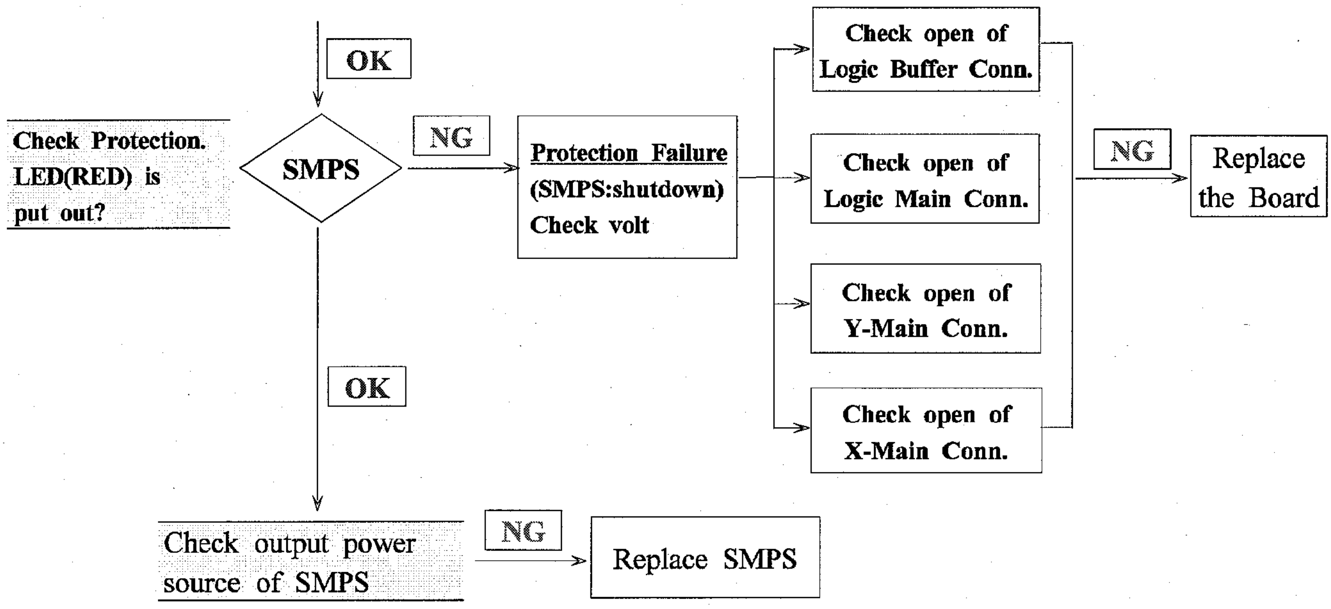
◆ No Power

■ **Symptom : Operating voltages don't exist**

■ **Trouble Shooting Method**

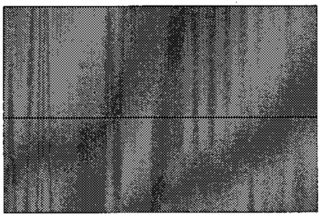

AC Power Cord is connected?
NG
Connect AC Power Cord
OK
Check Connector
AC Noise Filter
NG
AC Noise Filter
FUSE is Open?
Choke is miss-orinted?
OK

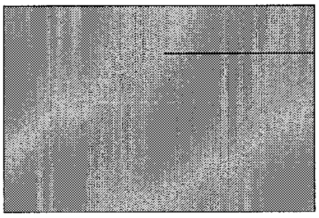

OK
ON/OFF Relay acts?
SMPS
NG
LED(Green) act?
NG
Replace SMPS
OK
Check V5A (5Vdc)
SMPS
NG
Replace SMPS
OK


OK
Check Protection. LED(RED) is put out?
SMPS
NG
Protection Failure (SMPS:shutdown) Check volt
Check open of Logic Buffer Conn.
Check open of Logic Main Conn.
Check open of Y-Main Conn.
Check open of X-Main Conn.
NG
Replace the Board
OK
Check output power source of SMPS
NG
Replace SMPS

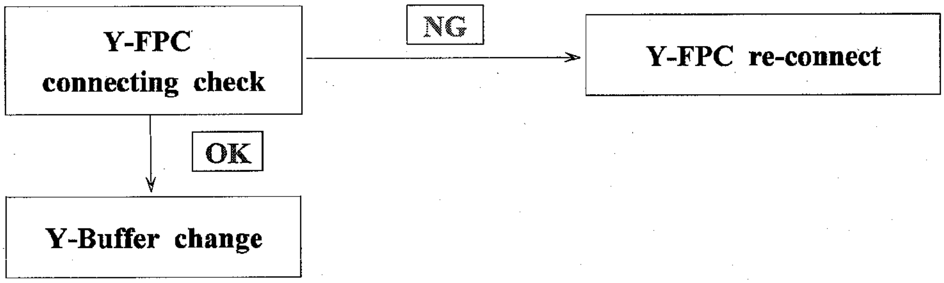
◆ Sustain(Horizontal Line) Open

■ **Symptom : No lighting of one line, or more in the horizontal direction**



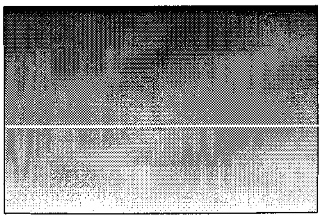


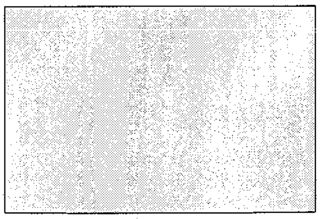
■ Trouble Shooting Method


Y-FPC connecting check
NG
Y-FPC re-connect
OK
Y-Buffer change

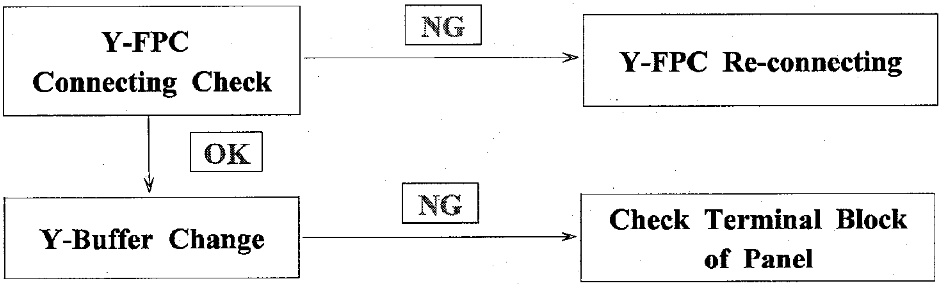
◆ Sustain(Horizontal Line) Short

■ **Symptom : Much brighter line than nearby lines in Ramp pattern or low gray scale pattern caused by short**



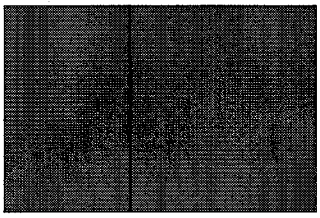


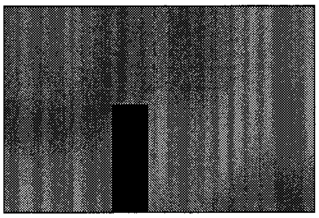
■ Trouble Shooting Method


Y-FPC Connecting Check
NG
Y-FPC Re-connecting
OK
Y-Buffer Change
NG
Check Terminal Block of Panel

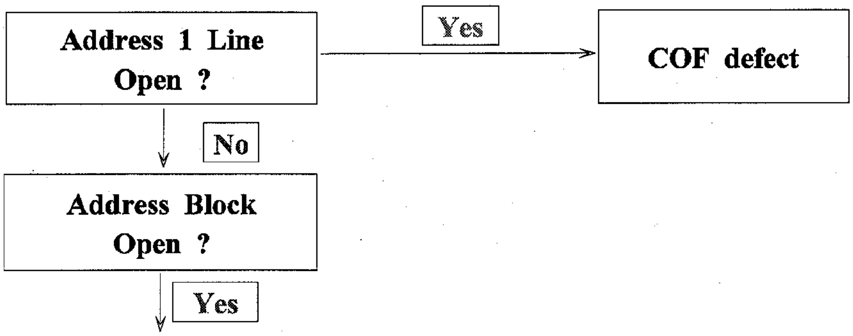
◆ Address(Vertical Line) Open

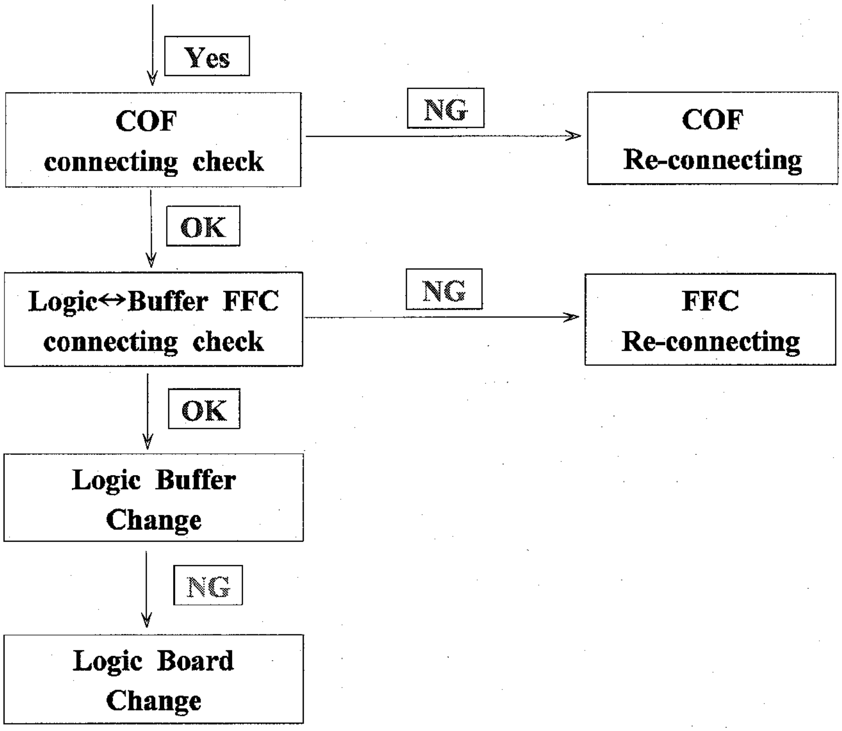
■ **Symptom : No lighting of one line or block in the vertical direction**
(1 Line open, Block Open)





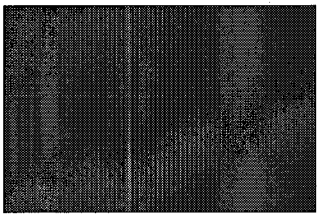
■ Trouble Shooting Method

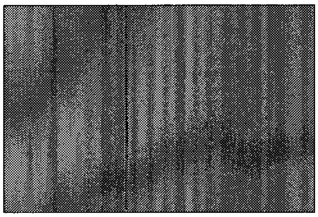

Address 1 Line
Open ?
Yes
COF defect
No
Address Block
Open ?
Yes


Yes
COF
connecting check
NG
COF
Re-connecting
OK
Logic↔Buffer FFC
connecting check
NG
FFC
Re-connecting
OK
Logic Buffer
Change
NG
Logic Board
Change

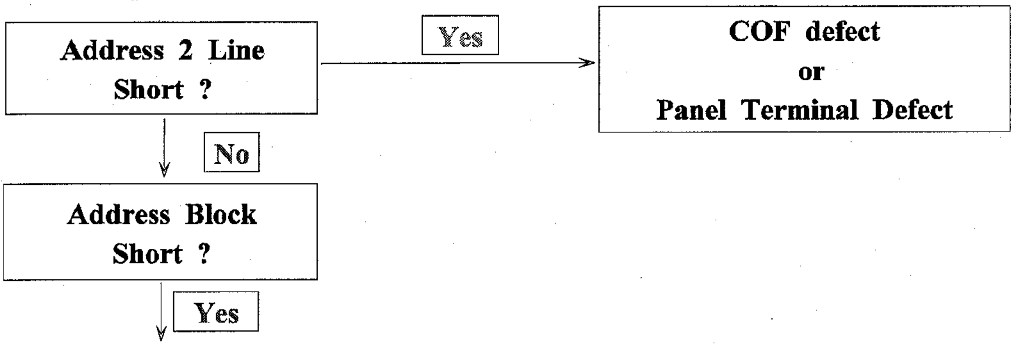
◆ Address(Vertical Line) Short

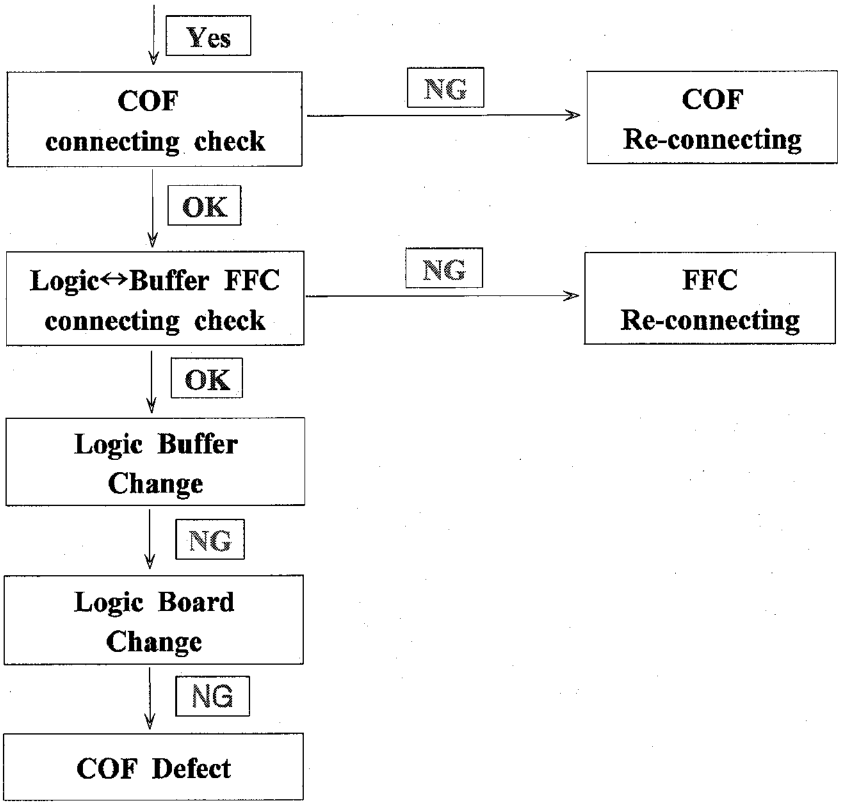
■ **Symptom : In a single color pattern, other colors lighting or non lighting caused by address short**





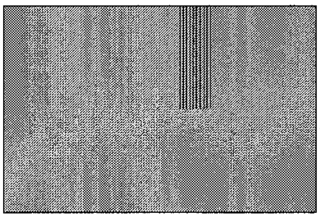
■ Trouble Shooting Method

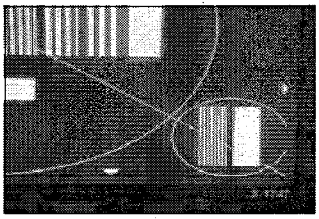

Address 2 Line Short ?
Yes
COF defect or Panel Terminal Defect
No
Address Block Short ?
Yes


Yes
COF connecting check
NG
COF Re-connecting
OK
Logic↔Buffer FFC connecting check
NG
FFC Re-connecting
OK
Logic Buffer Change
NG
Logic Board Change
NG
COF Defect

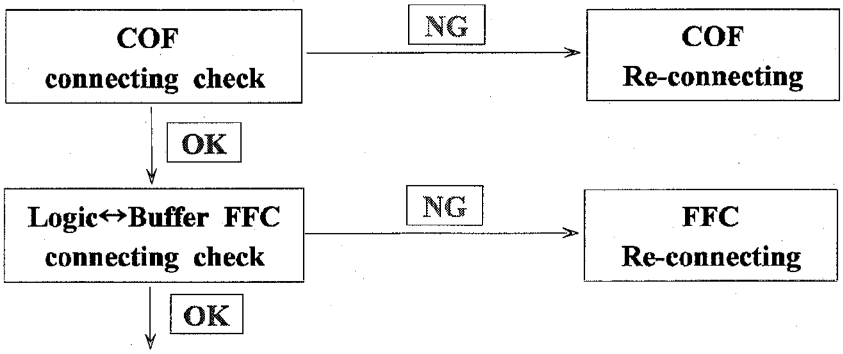
◆ Address(Vertical Line) Output Defect

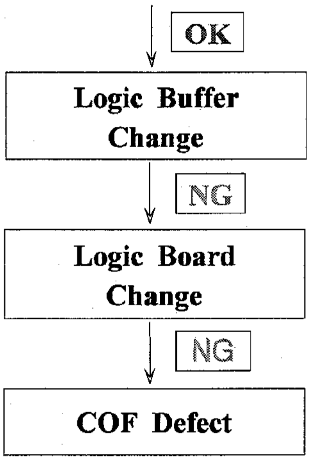
■ **Symptom :** **Abnormal output signal of data in specific gray scale or specific pattern except address open and short**





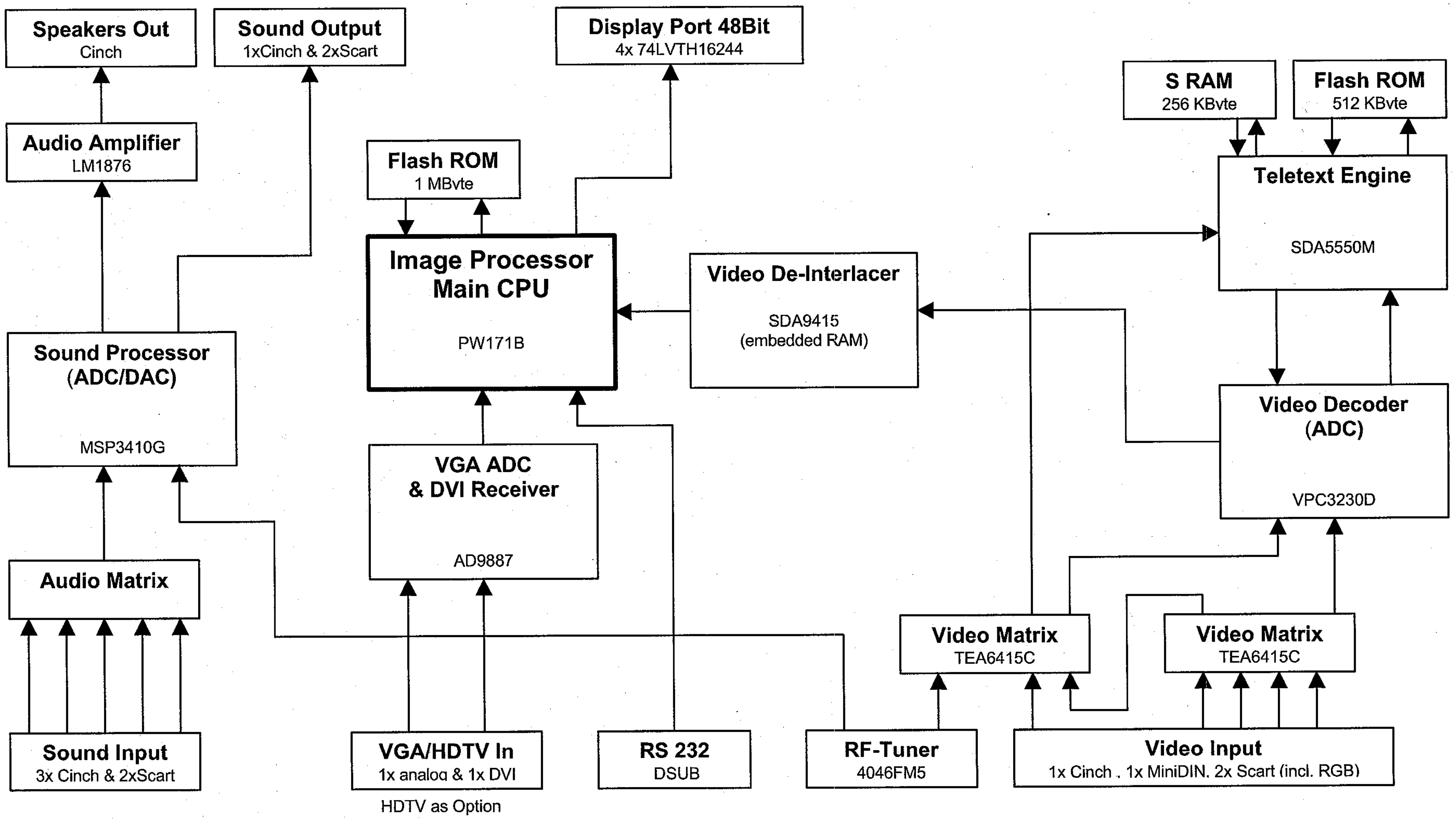
■ Trouble Shooting Method


COF connecting check
NG
COF Re-connecting
OK
Logic↔Buffer FFC connecting check
NG
FFC Re-connecting
OK

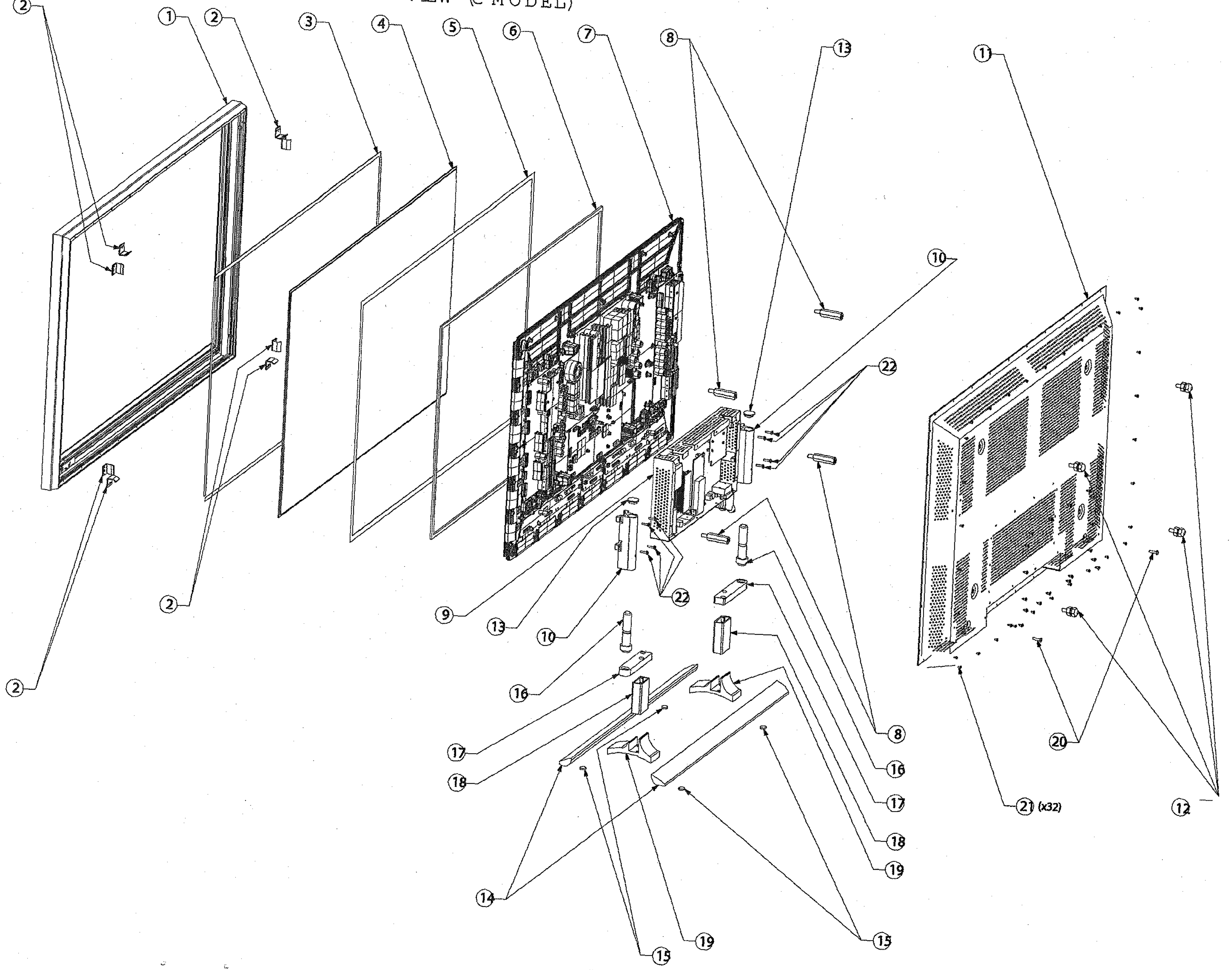

OK
Logic Buffer Change
NG
Logic Board Change
NG
COF Defect

BLOCK DIAGRAM AV3 BOARD

Block Diagram AV3 Board


Speakers Out
Cinch
Sound Output
1xCinch & 2xScart
Display Port 48Bit
4x 74LVTH16244
S RAM
256 KByte
Flash ROM
512 KByte
Audio Amplifier
LM1876
Flash ROM
1 MByte
Teletext Engine
SDA5550M
Image Processor
Main CPU
PW171B
Video De-Interlacer
SDA9415
(embedded RAM)
Sound Processor
(ADC/DAC)
MSP3410G
Video Decoder
(ADC)
VPC3230D
VGA ADC
& DVI Receiver
AD9887
Audio Matrix
Video Matrix
TEA6415C
Video Matrix
TEA6415C
Sound Input
3x Cinch & 2xScart
VGA/HDTV In
1x analog & 1x DVI
HDTV as Option
RS 232
DSUB
RF-Tuner
4046FM5
Video Input
1x Cinch , 1x MiniDIN, 2x Scart (incl. RGB)

EXPLODED VIEW (C MODEL)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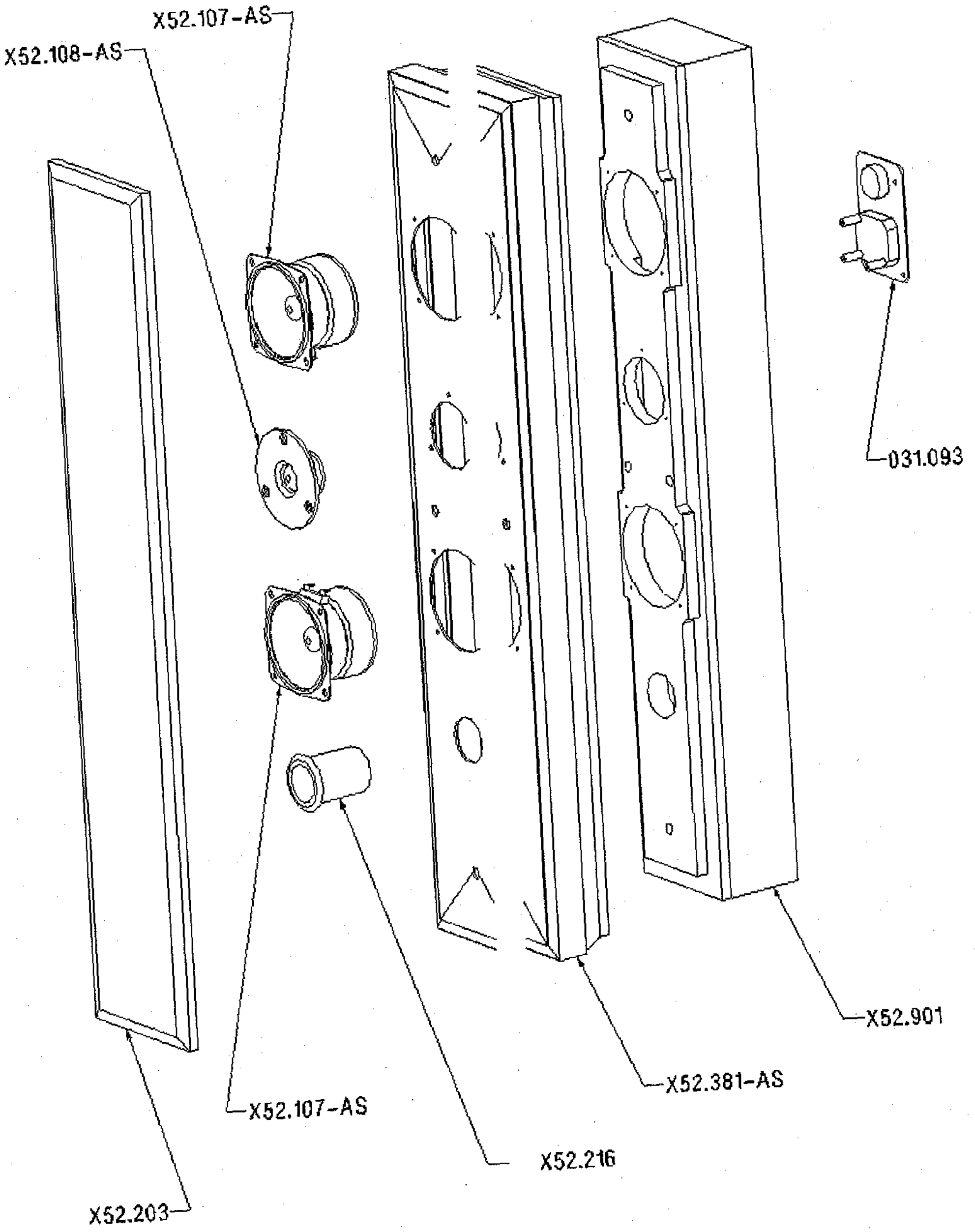
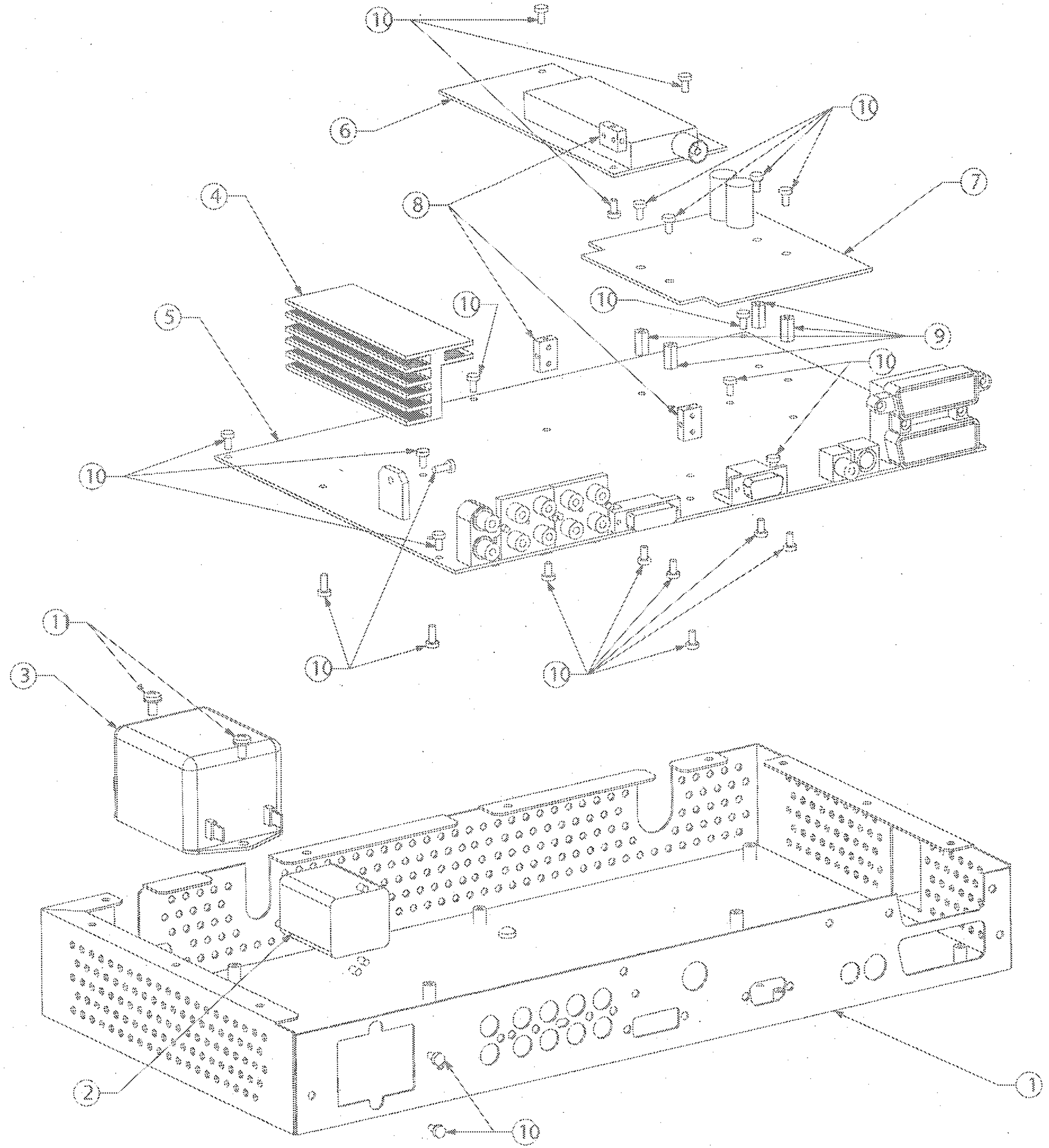
⑲
⑮
⑮
⑳
㉑ (x32)
⑫

SPEAKER
EXPLODED VIEW
(C MODEL)


X52.107-AS
X52.108-AS
031.093
X52.901
X52.381-AS
X52.107-AS
X52.216
X52.203



NO	KOD NO	PARCA ADI	ADET	ACIKLAMALAR
11	011.913	M4x8 YSBR	2	
10	011.905	M3x6 YSBR	26	
9	X52.367	PCB BAGLANTI ELEMANI ALTIGEN	4	
8	X52.368	PCB TUNER BAGLANTI ELEMANI DORTGEN	3	
7	X52.197	LVDS BOARD PCB	1	
6	X52.196	TUNER BOARD PCB	1	
5	X52.195	AV3 BOARD PCB	1	
4	X52.308	SOGUTUCU	1	
3	051.773	LINE FILTER 6ET1	1	
2	051.829	LINE FILTER 6CFE1	1	
1	X52.355	AV BOARD KUTUSU	1	

DEG.NO/ NUMBER	DEGISIKLIK/ CHANGE	TARIH/ DATE	IMZA/ SIGNATURE

KULLANIM HAKLARI ve DIGER ACIKLAMALAR/ PROPERTY RIGHTS and EXPLANATIONS

1) Bu teknik resim BEKO ELOKTRONIKA.S'nin malidir izinsiz olarak cogaltilamaz ve bas[illegible]
This technical drawing belongs to BEKO ELEKTRONIK.Can not be copied without permi[illegible]
2) Yeni teknik resim ayni kodlu mevcut TEKNIK RESMI iptal eder.
Every new technical drawing canceles the existing ones.
3) Bu resim CAD ciktisidir.Resimden olcu almayiniz ve/veya degisiklikleri CAD kullanarak yapiniz.
The part is the CAD design and do not take dimension from drawing.Make all changes using CAD sys
4) Daire icindeki harfler parcanin "kritik boyutlarini" gostermektedir.
Letters in circle show the critical dimensions of part.
5) Teknik resimde bulunamayan ve/veya belirtilemeyen olculer icin CAD dataya bakilmalidir.
For the undefinable dimensions please refer CAD data.

d			
c			
b			
a	AV BOARD		
	TANIM/DESCRIPTION	MALZEME/ MATERIAL	ACIKLAMALAR/EXPLANATIONS

TOLERANS/ TOLERANCE X	OLCEK/SCALA 1/1	SAYFA/PAGE : 1/1	d	
		14/11/03	c	
[illegible]		O.CENGIZ		
		O.OZGEN	b	
		C.GUREMEN		
		BEKO ELEKTRONIK	a	

EXPLODED VIEW PART LIST

PART NO	DESCRIPTION	NOTES	LOCATION
X52351-AS	TOP COVER 42"B40(C MODEL)WITH COMPLETED		1
090169	DOUBLR SIDE TAPE PDP SPECIAL		3
X51028	MESH FILTER (GLASS EMI) 2273-0008-0092		4
090197	COPPER CONDUCTOR TAPE PDP SPECIAL		5
090196	SPONGE TAPE PDP SPECIAL		6
X51102	PDP V2 PANEL VE POWER SUPPLY		7
X52354	42"PDP BOSS		8
X52355	42"PDP AV BOARD BOTTOM COVER		9
X52357	42"PDP L PANEL CONNECTION PART		10
X52255	42"PDP BACK COVER SILVER		11
X52372	42"PDP BACK COVER COMP SCREW (M8)		12
011936	SCREW M5X20 W/WASHER PAN HEAD		20
011935	SCREW 30X8 EJOT PT TYPE DG WN1552 TORX		21
011929	SCREW M4X20 W/WASHER PAN HEAD		22

PANEL BOARDS AND PANEL CABLES

PART NO	DESCRIPTION	NOTES	LOCATION
X51103	PCB ASSY X MAIN ASSY (LJ92-00748A)		*
X51104	PCB ASSY LOGIC-BUFFER (G) (LJ92-00634A)		*
X51105	PCB ASSY LOGIC-BUFFER (F) SDI42 (LJ92-00633A)		*
X51106	PCB ASSY LOGIC-BUFFER (E) SDI42 (LJ92-00632A)		*
X51107	PCB ASSY Y-BUFFER (UP) SDI42 (LJ92-00751A)		*
X51108	PCB ASSY Y-BUFFER (DOWN) SDI42 (LJ92-00750A)		*
X51109	PCB ASSY LOGIC-BOARD SDI42 (LJ92-00818A)		*
X51110	PCB ASSY SMPS (PSU) SDI42 (LJ44-00049A)		*
X51111	PCB ASSY Y-BOARD SDI42 (LJ92-00749A)		*
X51112	FPC 58x61mm (H*V),86LINES,0.6PITCH,80P (LJ94-00002A)		
X51113	FFC CABLE-FLAT LOGIC-XBOARD (3809-001396) 60V,105C,210MM,30P,0.5MM,UL20861		
X51114	FFC CABLE-FLAT (3809-001398) 60V,105C,210MM,30P,0.5MM,UL20861		
X51115	FFC CABLE-FLAT LOGIC-YBOARD (3809-001397) 60V,105C,105MM,40P,0.5MM,UL20861		
X51116	CABLE SMPS-LOGIC (LJ39-00113A)		
X51117	CABLE SMPS-L BUFFER (E) (LJ39-00151A)		
X51118	CABLE SMPS-XBOARD (LJ39-00152A)		
X51119	CABLE SMPS-YBOARD (LJ39-00153A)		
X51120	CABLE L BUFFER-L BUFFER (LJ39-00109A)		

*See panel pic.

BOARDS

PART NO	DESCRIPTION	NOTES	LOCATION
X51027	4042-7210-0000 LP-LVDS-ADAPTOR BOARD		
X51025	4042-6302-0100 LP-SIGNAL PROCES AV3		

OTHER PARTS

PART NO	DESCRIPTION	NOTES	LOCATION
X52204F	LENS IR/LED 42"PDP		
X52805	STROPOR TOP LEFT-RIGHT 42PAB40		
X52806	STROPOR BOT.LEFT-RIGHT 42PAB40		
X52807	STROPOR TOP CENTRAL 42PAB40		
X52808	STROPOR BOTTOM CENTRAL 42PAB40		
X52160	IR/LED ASSY 42"PDP		
101163	CFR 150R J 1/4W 26MM		R901
101163	CFR 150R J 1/4W 26MM		R902
303900	LED ROT		D902
251120	EC 10UF 10V 5*4 R:5		C901
303407	LED ROT LTL 4221N P6 GREEN		D902
452521-01	IR RECEIVER TSOP34838 SS1A		IC901
8R9380	KAUCUK HORZ.FOOD 17"LCD TV		
X52387	DESKTOP LEG ARCH PROFILE PDP		
X52381-AS	DESKTOP SPEAKER 42"B40 (C MODEL)AL FRAME		
X52108-AS	TWEETER 8R 10W (N)/20W (M) PDP 42"		
X52107-AS	SPEAKER 4R 7W (N)/12W (M) PDP 42"		
X52519-AS	CABLE SPAEKER 2P BLACK/RED L=250MM		
X52520-AS	CABLE SPAEKER SINGLE RED L=250MM		
X52522-AS	CABLE SPAEKER SINGLE BLUE L=400MM		
X52521-AS	CABLE SPAEKER SINGLE BLACK L=250MM		
038921	MAIN CABLE PC/MONITOR 2MT EURO		
X52187	RC HAND SET 42"PDP BEKO		
X52524-AS	CABLE HARNESS L=115MM WITH POWER SP MAK.		
X52525-AS	CABLE WITH TERM L=190MM WITH MAK POWER S		
X52526-AS	CABLE HARNESS L=550MM VIDEO/AUDIO BLE.		
X52527-AS	CABLE WITH TERM L=110MM YEL-GR1X28X0.22		
X52528-AS	CABLE HARNESS 6POL L=190MM PURPLE		
X52529-AS	CABLE HARNESS 7POL L=320MM PURPLE		
X52531-AS	CABLE HARNESS 10POL L=200MM PURPLE		
X52532-AS	CABLE HARNESS 4POL L=200MM PURPLE		
X52530-AS	CABLE HARNESS 13POL L=350MM PURPLE		
051773	LINE FILTER WITH CAP+RES 6ET1 /CORCOM		
033134	CABLE VGA-DVI-I PDP 42"		
051829	LINE FILTER-2 PDP 6CFE1		
X52514-AS	CABLE SPEKAER-PDP CONN. L=2M		
X51100	DESKTOP GUIDE 42"PDP		
X52801	INS MAN.(FR+EN+AL+FL+ES+POR+ITA)42PBB40		
031093	SOCKET SPEAKER 42"PDP		
X52804	MANUEL DESKTOP SPEAKER 42"PDP		

This list is tentative , please ask spare part list to Beko with your model number

DATE: July 15, 2004

Beko

SERVICE MANUAL

107cm (42 Inch) Wide Plasma Display Module

MODEL : 42" S31PDP

CONTENTS

1.Overview
  1-1 Model Name of plasma Display
  1-2 External View
  1-3 Specifications

2.Precaution
  2-1 Handling Precaution for Plasna Display,
  2-2 Safety Precautions for Service (Handling, prevention of a electrical shock, measure against power outage, etc)

3.Name & Function
  3-1 Layout of Assemblies
  3-2 Block Diagram :
  3-3 Main function of Each Assembly
  3-4 Product/Serial Label Location

4.Operation checking after rectification
  4-1 Flow chart
  4-2 Defects , Symptoms and Detective Parts

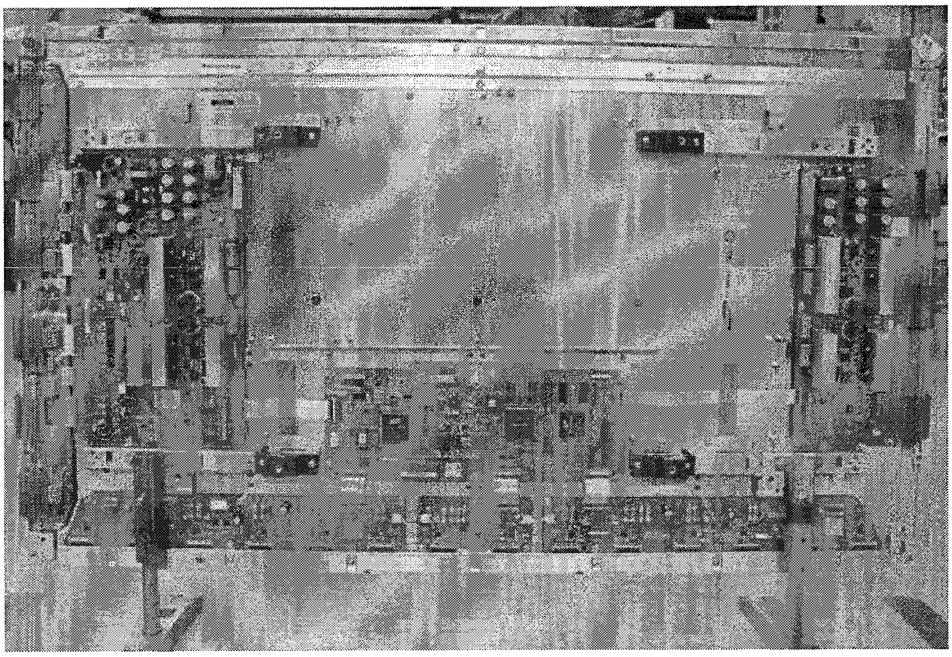
5.Disassembling /Assembling
  5-1 Tools and measurement equipment
  5-2 Exploded View
  5-3 Disassembling & Re-assembling
6.Operation Check after Repair Service
  6-1 Check Item
  6-2 Check Procedure
7.Operation Check
  7-1 Adjustment Specification, Checking Position etc.
  7-2 Adjusting procedure
8.Spare part list for the panel

1. Overview

1-1 Model Name of Plasma Display

MODEL : 42" S31 PDP (S42SD-YD05)

1-2 External View



【 M1 = X Board + Y Board + Logic Board 】

1-3 Specifications

No	**Item**	**Specification**	
1	Pixel	852 (H) × 480 (V) pixels (1 pixel = 1 R,G,B cells)	
2	Number of Cells	2556 (H) × 480 (V)	
3	Pixel Pitch	1.095 (H) mm × 1.110 (V) mm	
4	Cell Pitch	R	0.365 (H) mm × 1.110 (V) mm
		G	0.365 (H) mm × 1.110 (V) mm
		B	0.365 (H) mm × 1.110 (V) mm
5	Display size	932.940 (H) mm × 532.800 (V) mm [36.73 inch × 20.98 inch]	
6	Screen size	Diagonal 42" Color Plasma Display Module	
7	Screen aspect	16 : 9	
8	Display color	16.77 million colors	
9	Viewing angle	Over 160° (Angle with 50% and greater brightness perpendicular to PDP module)	
10	Dimensions	982 (W) × 582 (H) × 52.9 (D) mm	
11	Weight	Module 1	About 16.6 kg
12	Packing weight	Module 1	240kg ± 5kg (including modules) / 10pcs/BOX
13	Packing size	L 1175 * W 1140 * H 970 (mm) /10pcs/BOX	
14	Broadcasting reception Vertical frequency and Video/Logic Interface	PL42SD003C	60Hz/50Hz, LVDS

2.PRECAUTIONS

**To prevent the risks of unit damage, electrical shock and radiation, take the following safety, service, and ESD precautions.

2-1 Handling Precautions for Plasma Display

- PDP module use high voltage that is dangerous to human. Before operating PDP, always check the dust to prevent circuit short. Be careful touching the circuit device when power is on.
- PDP module is sensitive to dust and humidity. Therefore, assembling and disassembling must be done in no dust place.
- PDP module has a lot of electric devices. Service engineer must wear equipment (for example, earth ring) to prevent electric shock and working clothes to prevent electrostatic.
- PDP module use a fine pitch connector which is only working by exactly connecting with flat cable. Operator must pay attention to a complete connection when connector is reconnected after repairing.
- The capacitor's remaining voltage in the PDP module's circuit board temporarily remains after power is off. Operator must wait for discharging of remaining voltage during at least 1 minute.

2-2 Safety Precautions for Service (Handling, prevention of a electrical shock, measure against power outage, etc)

(Safety Precautions)

- Before replacing a board, discharge forcibly The remaining electricity from board.
- When connecting FFC and TCPs to the module, recheck that they are perfectly connected.
- To prevent electrical shock, be careful not to touch leads during circuit operations.
- To prevent the Logic circuit from being damaged due to wrong working, do not connect/disconnect signal cables during circuit operations.
- Do thoroughly adjustment of a voltage label and voltage-insulation.
- Before reinstalling the chassis and the chassis assembly, be sure to use all protective stuffs including a nonmetal controlling handle and the covering of partitioning type.
- Caution for design change : Do not install any additional devices to the module, and do not change the electrical circuit design.
- For example: Do not insert a subsidiary audio or video connector. If you insert It, It cause danger on safety. And, If you change the design or insert, Manufactor guarantee will be not effect. .
- If any parts of wire is overheats of damaged, replace it with a new specified one immediately, and identify the cause of the problem and remove the possible dangerous factors.
- Examine carefully the cable status if it is twisted or damaged or displaced. Do not change the space between parts and circuit board. Check the cord of AC power preparing damage.
- Product Safety Mark : Some of electric or implement material have special characteristics invisible that was related on safety. In case of the parts are changed with new one, even though the Voltage and Watt is higher than before, the Safety and Protection function will be lost.
- The AC power always should be turned off, before next repair..
- Check assembly condition of screw, parts and wire arrangement after repairing. Check whether the material around the parts get damaged.

(Precaution when repairing ESD)

- There is ESD which is easily damaged by electrostatics. (for example Integrated circuit, FET) Electrostatic damage rate of product will be reduced by the following technics

- Before handling semiconductor parts/assembly, must remove positive electric by ground connection, or must wear the antistatic wrist-belt and ring. (It must be operated after removing dust on it - It comes under precaution of electric shock.)

- After removing ESD assembly, put on it with aluminum stuff on the conductive surface to prevent charging.

- Do not use chemical stuff using Freon. It generates positive electric that can damage ESD.

- Must use a soldering device for ground-tip when soldering or de-soldering ESD.

- Must use anti-static solder removal device. Most removal device do not have antistatic which can charge a enough positive electric enough damaging ESD.

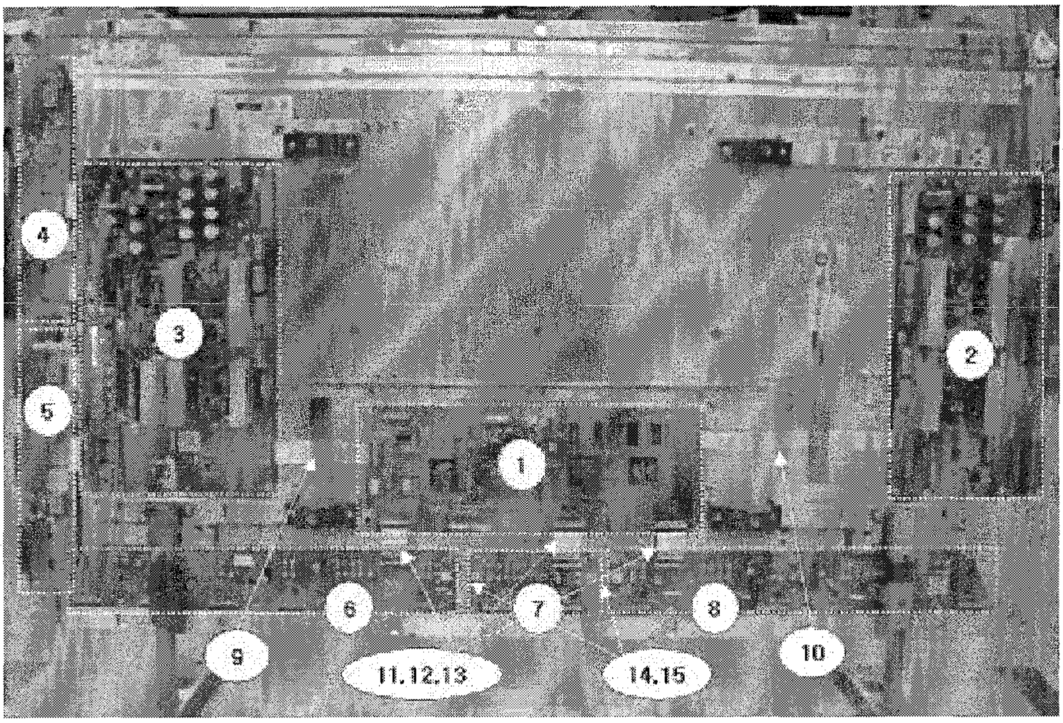
- Before removeing the protective material from the lead of a new ESD, bring the protective material into contact with the chassis or assembly that the ESD is to be installed on.

- When handing an unpacked ESD for replacement, do not move around too much. Moving (legs on the carpet, for example) generates enough electrostatic to damage the ESD.

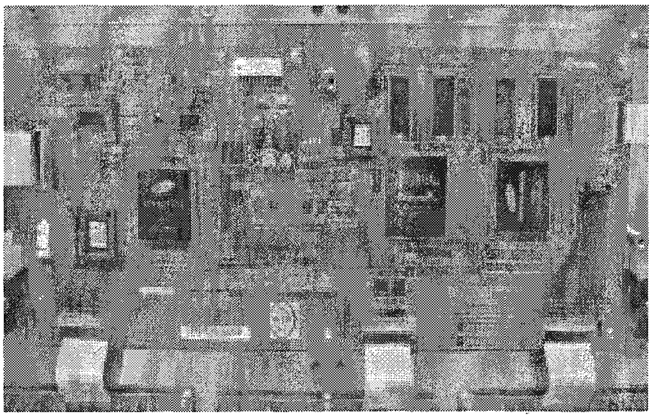
- Do not take a new ESD from the protective case until the ESD is ready to be installed. Most ESD have a lead, which is easily short-circuited by conductive materials (such as conductive foam and aluminum)

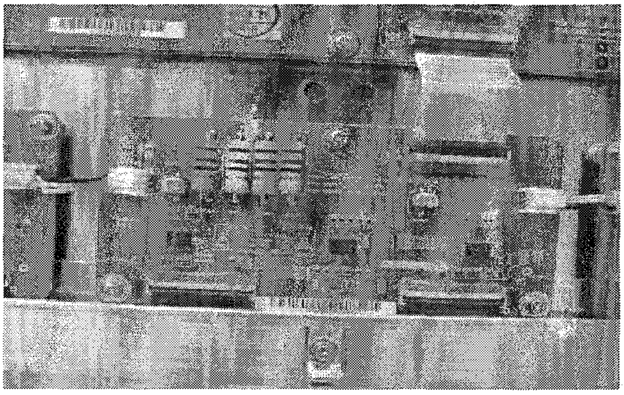
3 NAME & FUNCTION

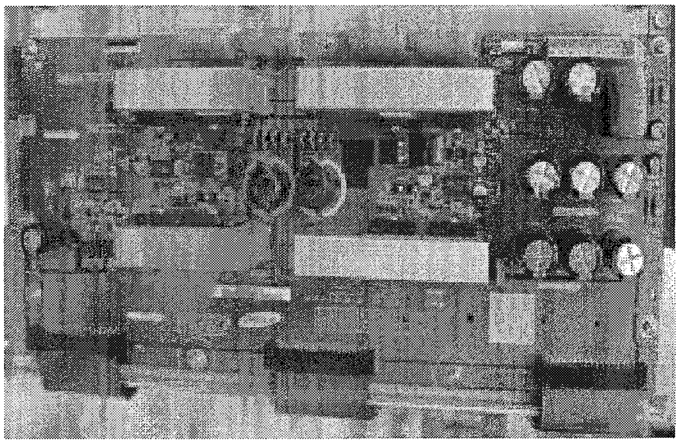
3-1 Layout of Assemblies


1
2
3
4
5
6
7
8
9
10
11.12.13
14.15

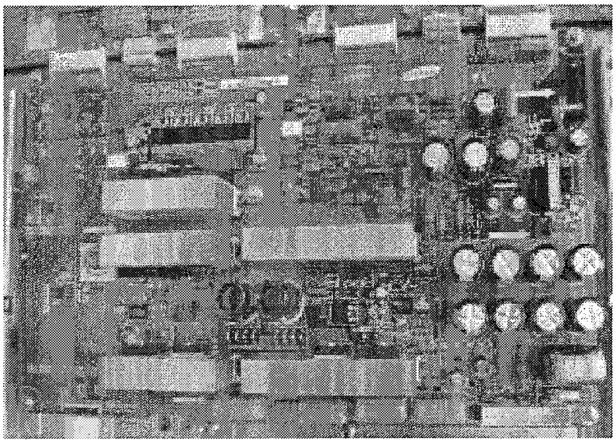
No.	Code No.	Location	品名
1	LJ92-00975A	Logic Main	ASSY PCB LOGIC MAIN
2	LJ92-00943A	X-Main	ASSY PCB X MAIN
3	LJ92-00944B	Y-Main	ASSY PCB Y MAIN
6	LJ92-00811A	Logic E Buffer	ASSY PCB BUFFER
7	LJ92-00812A	Logic F Buffer	ASSY PCB BUFFER
8	LJ92-00813A	Logic G Buffer	ASSY PCB BUFFER
9	LJ92-00796A	Y-Buffer (upper)	ASSY PCB BUFFER
10	LJ92-00797A	Y-Buffer (lower)	ASSY PCB BUFFER
11	3809-001397	Logic + Y-Main	FFC CABLE-FLAT
12	3809-001396	Logic + X-Main	FFC CABLE-FLAT
13	3809-001414	Logic + Logic Buf'(E)	FFC CABLE-FLAT
14	3809-001414	Logic + Logic Buf'(F)	FFC CABLE-FLAT
15	3809-001414	Logic + Logic Buf'(G)	FFC CABLE-FLAT
16	LJ39-00109A	Logic Buf'(E) + Logic Buf'(F)	LEAD CONNECTOR
17	LJ39-00109A	Logic Buf'(F) + Logic Buf'(G)	LEAD CONNECTOR
18	LJ39-00139A	SMPS + Video SMPS	LEAD CONNECTOR
19	LJ39-00140A	SMPS + Logic Buffer(E)	LEAD CONNECTOR
20	LJ39-00143A	SMPS + Logic Main	LEAD CONNECTOR
21	LJ39-00142A	SMPS + Y-Main	LEAD CONNECTOR
22	LJ39-00179A	SMPS + X-Main	LEAD CONNECTOR


1.L-Main

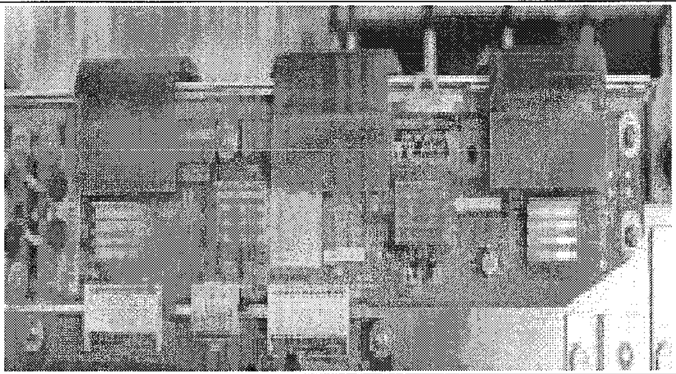

7.F-Buffer



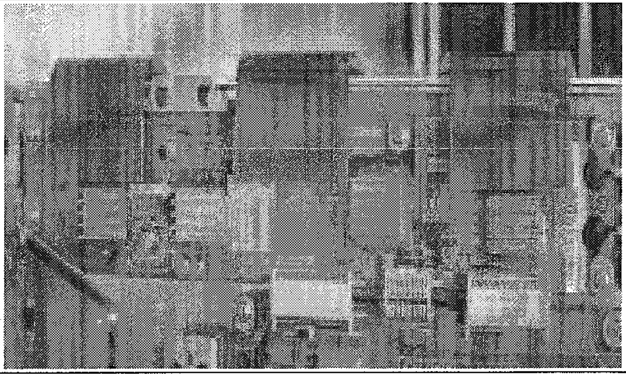
2.X-Main



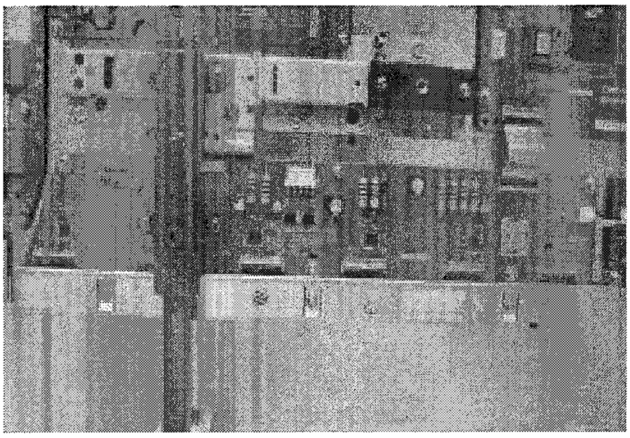
3.Y-Main



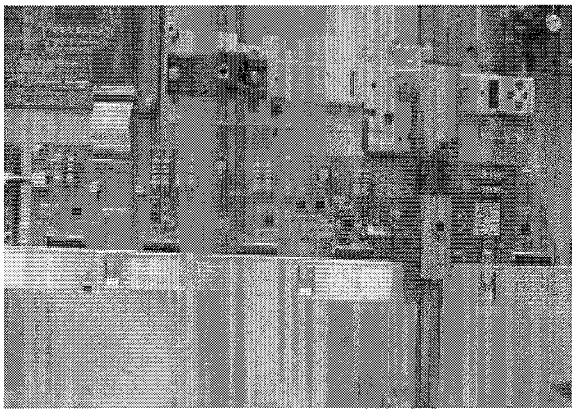
4,Y-Buffer (upper)



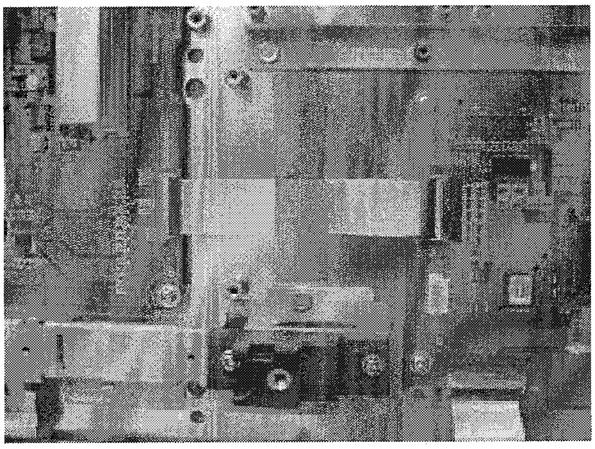
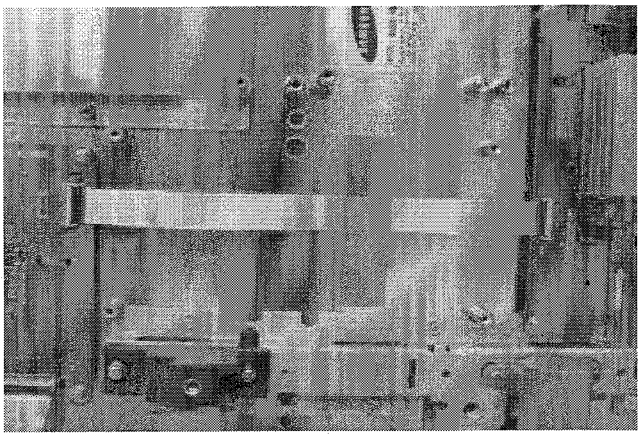
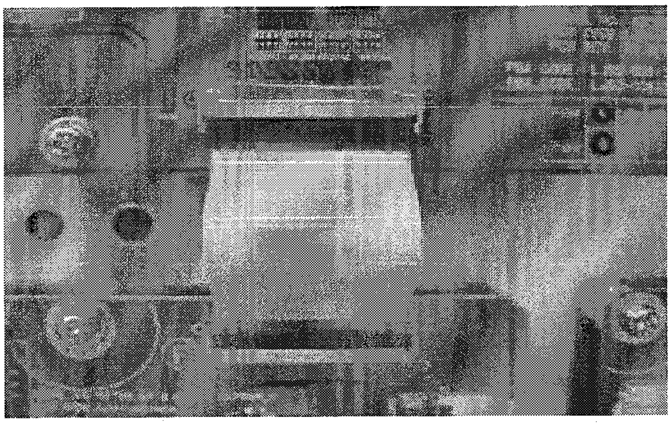
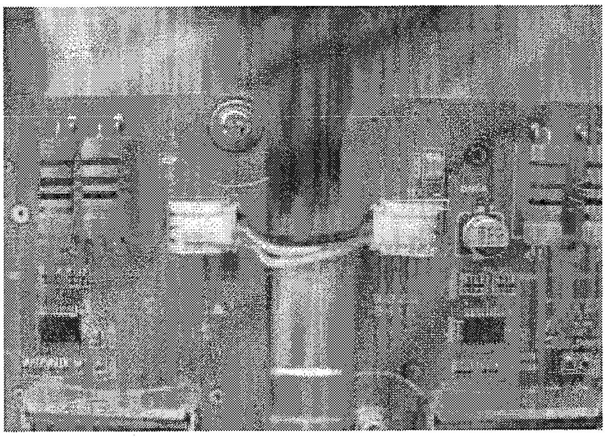
5.Y-Buffer (lower)



6.E-Buffer

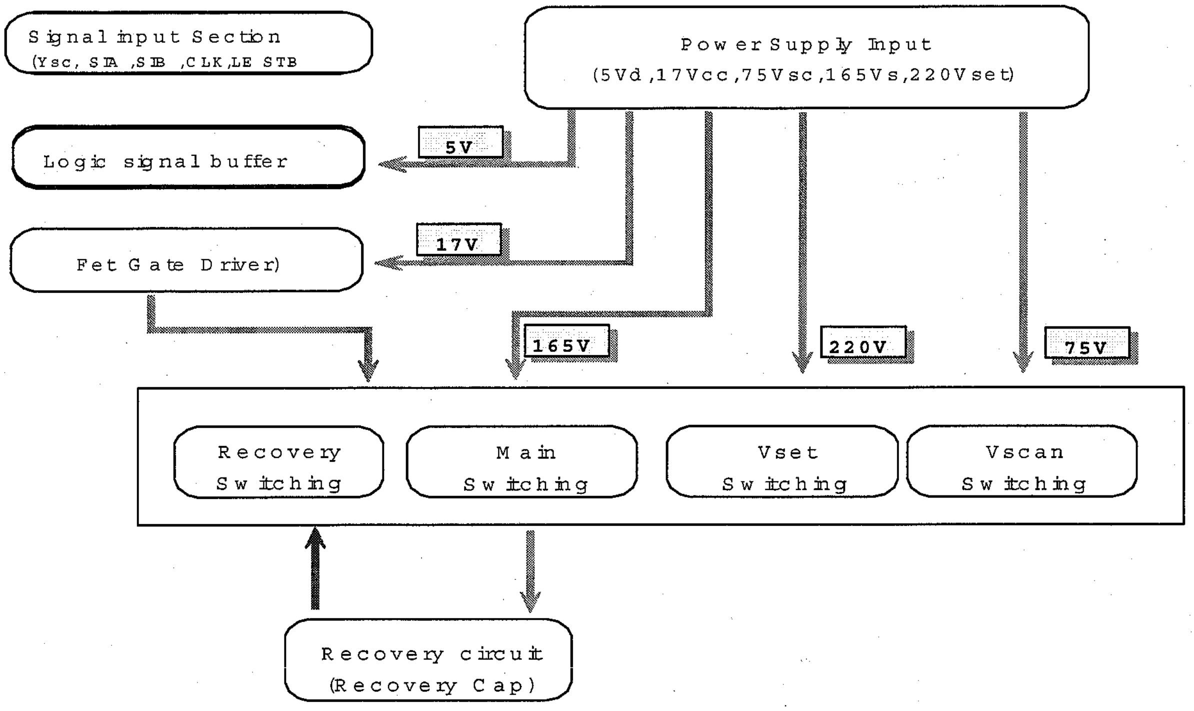


8.G-Buffer

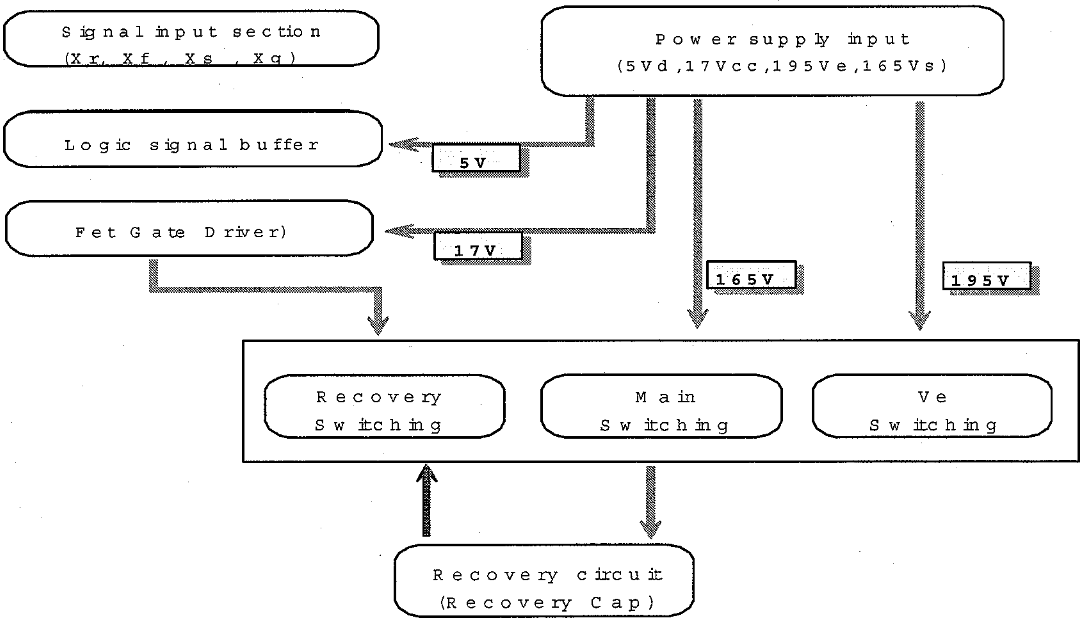
	
9.Logic + Y-Main	**10.Logic + X-Main**
	
11.12.13.Logic + Logic Buf(E,F,G)	**14.15.Logic Buffer 間**

3-2 BLOCK DIAGRAM

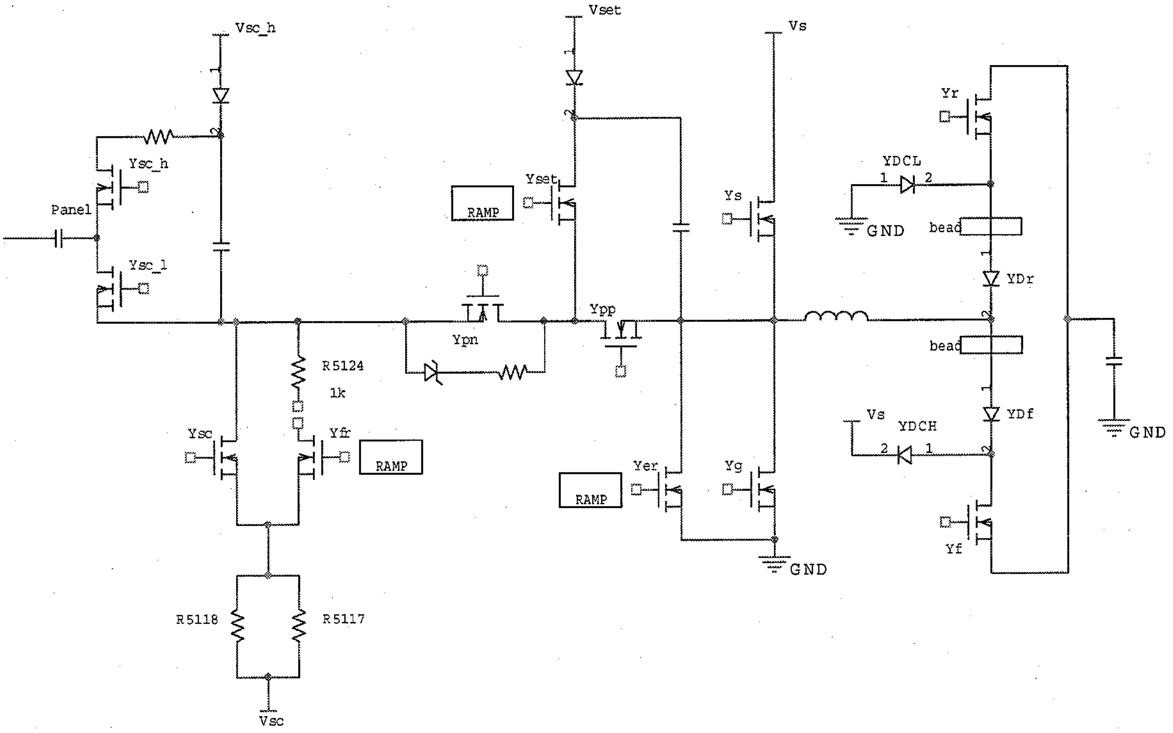
3-2-1 BLOCK DIAGRAM FOR DRIVE CIRCUIT OPERATION

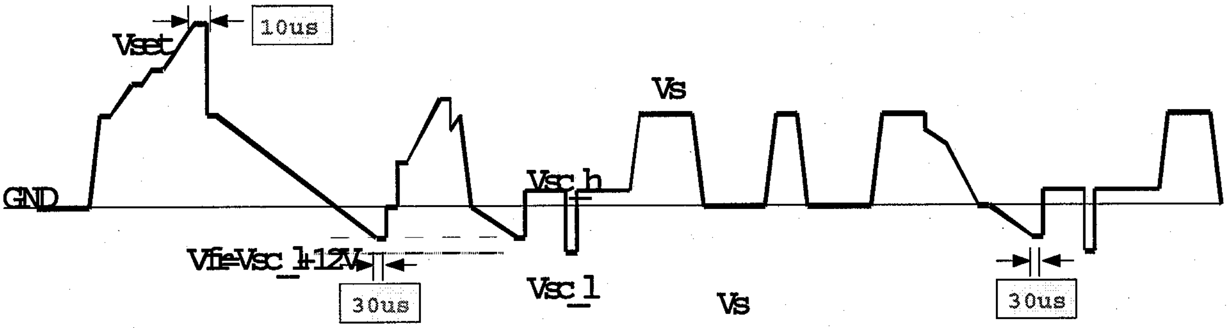

Signal input Section
(Ysc, STA ,STB ,CLK,LE STB
Power Supply Input
(5Vd ,17Vcc,75Vsc,165Vs,220Vset)
Logic signal buffer
5V
Fet Gate Driver)
17V
165V
220V
75V
Recovery Switching
Main Switching
Vset Switching
Vscan Switching
Recovery circuit
(Recovery Cap)

< DRIVE Y Board >


Signal input section
(Xr, Xf , Xs , Xg)
Power supply input
(5Vd ,17Vcc,195Ve,165Vs)
Logic signal buffer
5V
Fet Gate Driver)
17V
165V
195V
Recovery Switching
Main Switching
Ve Switching
Recovery circuit
(Recovery Cap)

< DRIVE X Board >

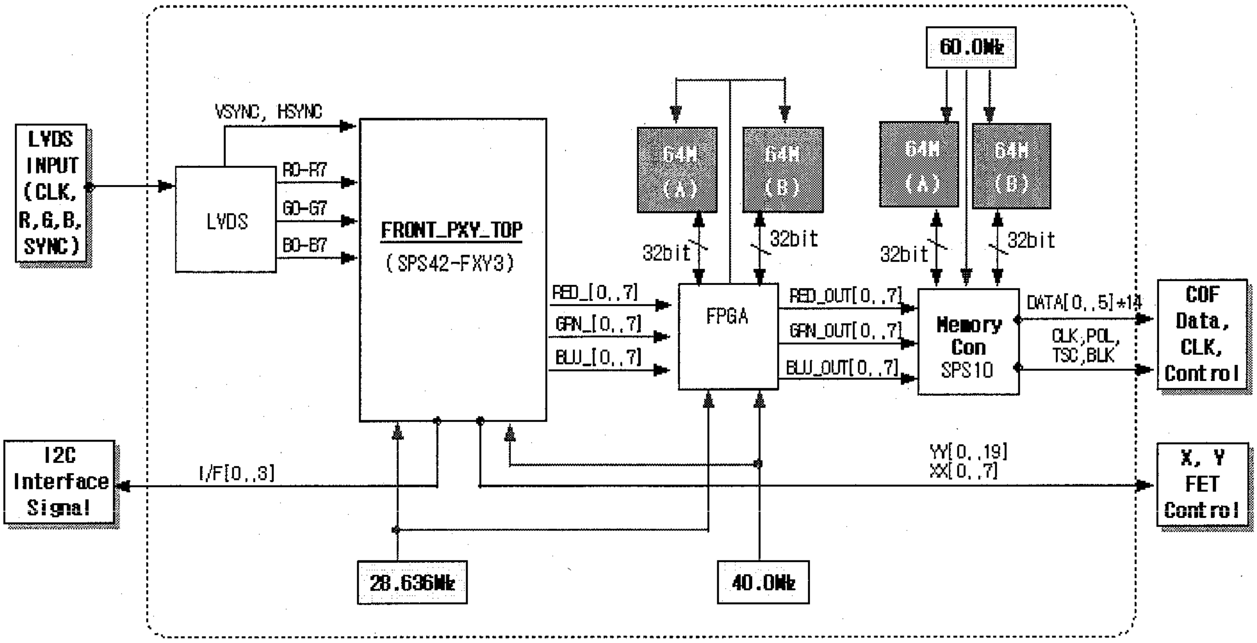

Vsc_h
Vset
Vs
Ysc_h
Panel
Ysc_l
Yset
RAMP
Ys
Yr
YDCL
1
2
GND
bead
YDr
Ypn
Ypp
R5124
1k
Ysc
Yfr
RAMP
Yer
RAMP
Yg
GND
bead
Vs
YDCH
YDf
Yf
GND
R5118
R5117
Vsc



< Drive waveforms >

3-2-2 Block Diagram for Logic circuit

Logic Main Block-Diagram


LVDS INPUT (CLK, R,G,B, SYNC)
LVDS
VSYNC, HSYNC
R0-R7
G0-G7
B0-B7
FRONT_PXY_TOP
(SPS42-FXY3)
RED_[0..7]
GRN_[0..7]
BLU_[0..7]
FPGA
64M (A)
64M (B)
32bit
32bit
60.0MHz
64M (A)
64M (B)
32bit
32bit
RED_OUT[0..7]
GRN_OUT[0..7]
BLU_OUT[0..7]
Memory Con SPS10
DATA[0..5]*14
CLK,POL, TSC,BLK
COF Data, CLK, Control
I2C Interface Signal
I/F[0..3]
YY[0..19]
XX[0..7]
X, Y FET Control
28.636MHz
40.0MHz

3-3 Main function of Each Assembly

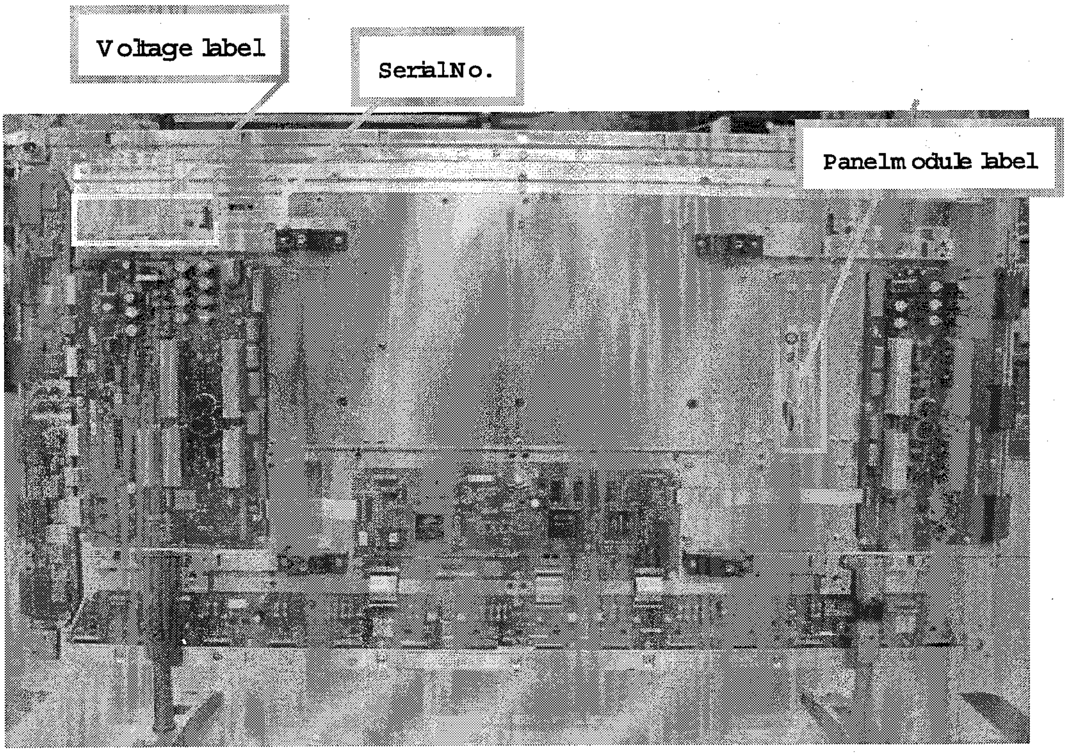
- X-main board : The X-main board generate a drive signal by switching the FET in synchronization with logic main board timing and supplies the X electrode of the panel with the drive signal through the connector.
  1) Maintain voltage waveforms (including ERC)
  2) Generate X rising ramp signal
  3) Maintain Ve bias between Scan intervals
- Y-main board : The Y-main board generate a drive signal by switching the FET in synchronization with the logic Main Board timing and sequentially supplies the Y electrode of the panel with the drive signal through the scan driver IC on the Y-buffer board. This board connected to the panel's Y terminal has the following main functions.
  1) Maintain voltage waveforms (including ERC)
  2) Generate Y-rising Falling Ramp
  3) Maintain V scan bias
- Logic main board : The logic main board generates and outputs the address drive output signal and the X ,Y drive signal by processing the video signals. This Board buffers the address drive output

signal and feeds it to the address drive IC (COF module)

(video signal-XY drive signal generation, frame memory circuit/address data rearrangement)

- ■ Logic buffer(E,F) : The logic buffer transmits data signal and control signal.
- ■ Y-buffer board (Upper, Lower) : The Y-buffer board consisting of the upper and lower boards supplies the Y-terminal with scan waveforms. The board comprises 8 scan driver IC's (ST microelectronics STV 7617 : 64 or 65 output pins), but 4 ICs for the SD class
- ■ AC Noise Filter : The AC Noise filter has function for removing noise (low Frequency) and blocking surge. It effects Safety standards (EMC, EMI)
- ■ TCP (Tape Carrier Package) : The TCP applies Va pulse to the address electrode and constitutes address discharge by the potential difference between the Va pulse and the pulse applied to the Y electrode. The TCP comprise 4 data driver Ics (STV7610A :96 pins output pins) 7 TCPs are required for signal scan .

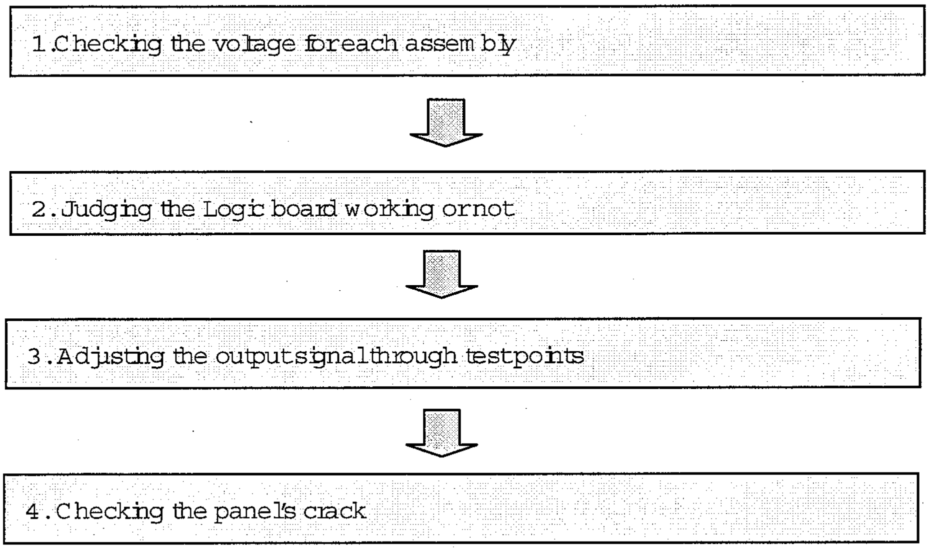
3-4 PRODUCT/SERIAL LABEL LOCATION



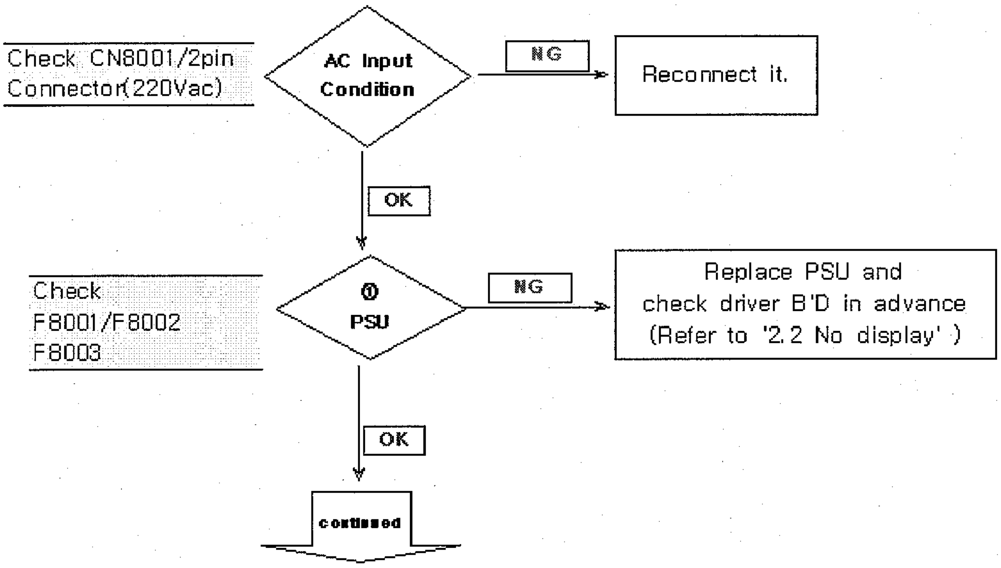
4. OPERATION CHECKING AFTER RECTIFICATION

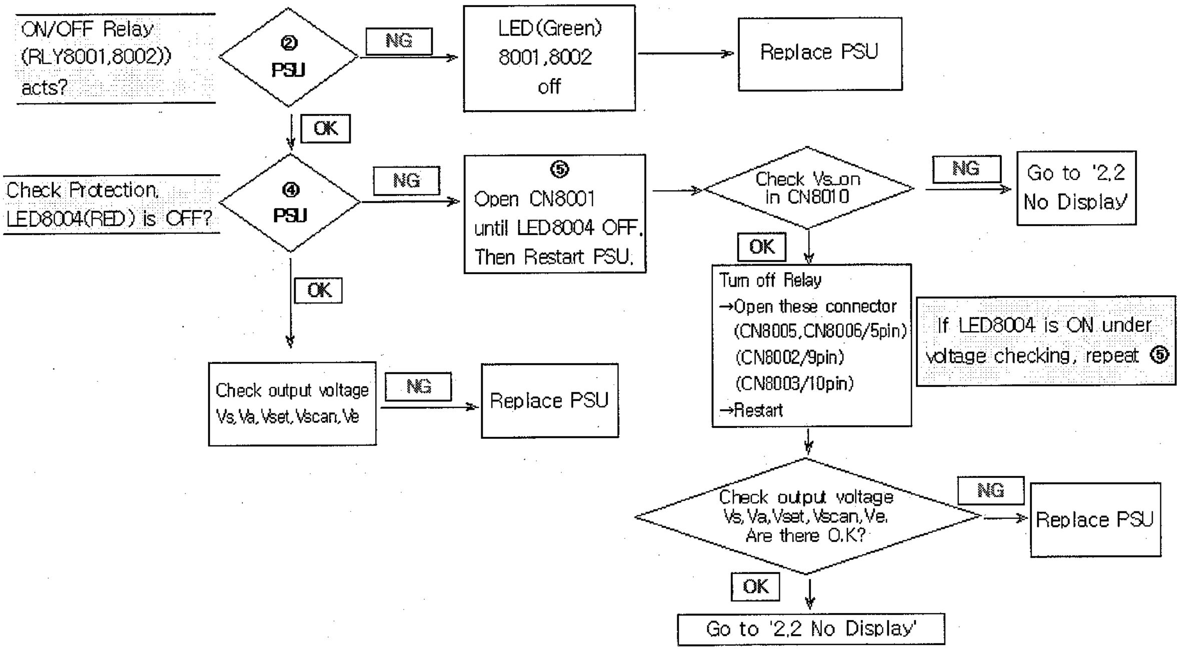
4-1 Flow chart

A/S Check Point


1.Checking the voltage for each assembly
2.Judging the Logic board working or not
3.Adjusting the output signal through test points
4.Checking the panel's crack

4-1-1 No voltage output

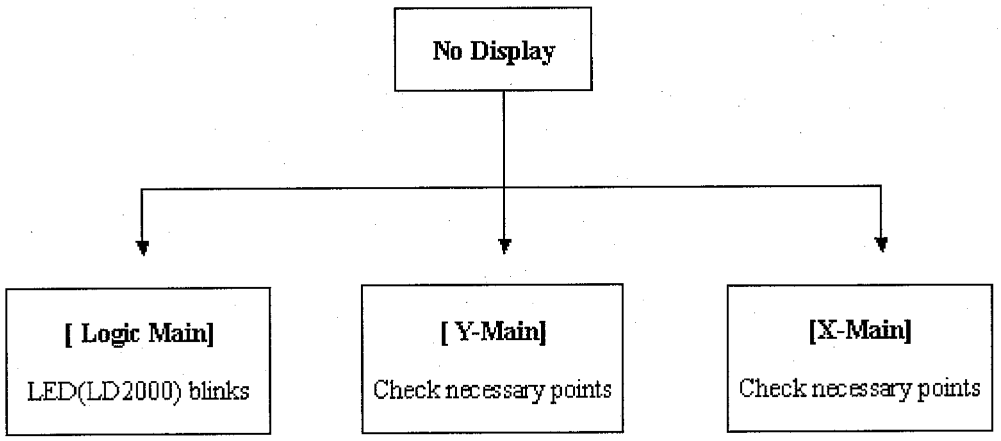

Check CN8001/2pin Connector(220Vac)
AC Input Condition
NG
Reconnect it.
OK
Check F8001/F8002 F8003
① PSU
NG
Replace PSU and check driver B'D in advance (Refer to '2.2 No display')
OK
continued

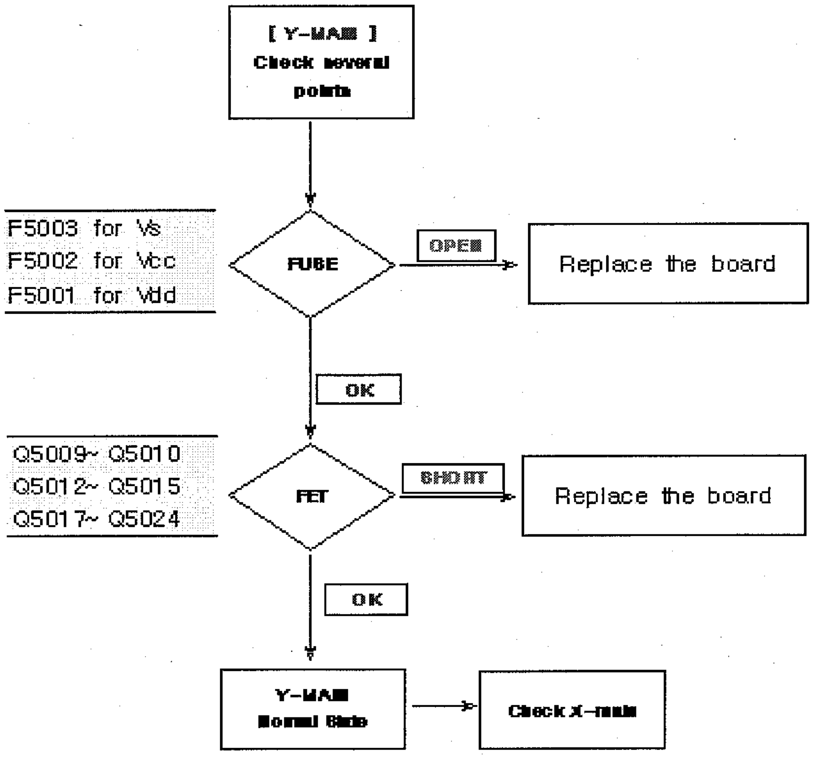

ON/OFF Relay (RLY8001,8002)) acts?
② PSU
NG
LED(Green) 8001,8002 off
Replace PSU
OK
Check Protection, LED8004(RED) is OFF?
④ PSU
NG
⑤ Open CN8001 until LED8004 OFF, Then Restart PSU.
Check Vs_on in CN8010
NG
Go to '2.2 No Display
OK
Turn off Relay
→Open these connector (CN8005,CN8006/5pin) (CN8002/9pin) (CN8003/10pin)
→Restart
If LED8004 is ON under voltage checking, repeat ⑤
OK
Check output voltage Vs,Va,Vset,Vscan,Ve
NG
Replace PSU
Check output voltage Vs,Va,Vset,Vscan,Ve, Are there O.K?
NG
Replace PSU
OK
Go to '2.2 No Display'

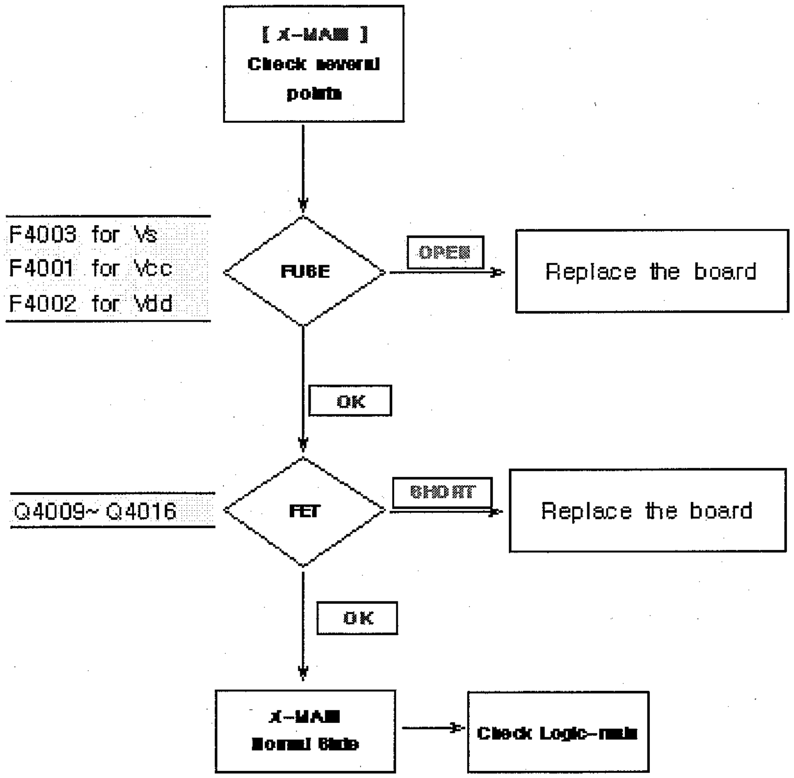
4-1-2 NO display (operating Voltage but an image doesn't exist on Screen)

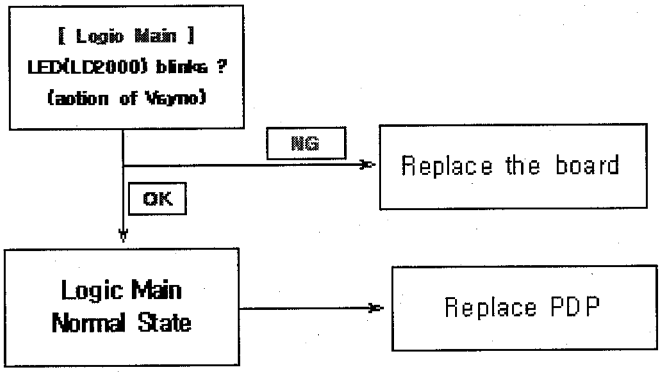
⇒ No Display is related with Y-MAIN, X-MAIN, Logic Main and so on.

This page shows you how to check the boards, and the following pages show you how to find the defective board.


No Display
[Logic Main]
LED(LD2000) blinks
[Y-Main]
Check necessary points
[X-Main]
Check necessary points


[Y-MAIN]
Check several points
F5003 for Vs
F5002 for Vcc
F5001 for Vdd
FUSE
OPEN
Replace the board
OK
Q5009~ Q5010
Q5012~ Q5015
Q5017~ Q5024
FET
SHORT
Replace the board
OK
Y-MAIN
Normal State
Check X-main

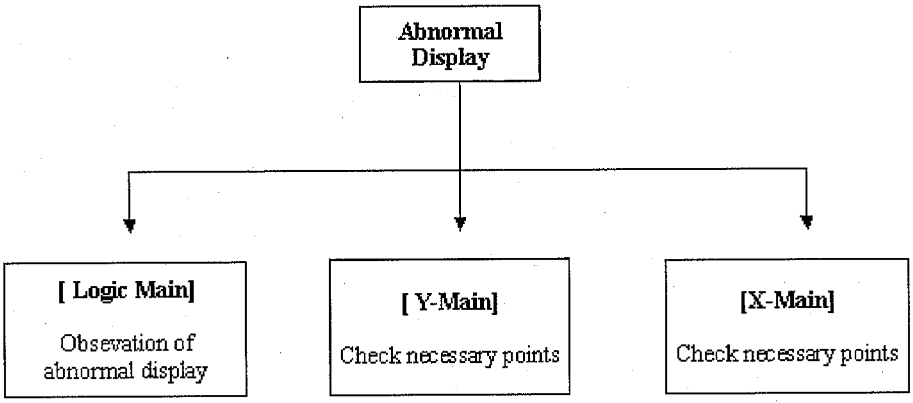

[X-MAIN]
Check several points
F4003 for Vs
F4001 for Vcc
F4002 for Vdd
FUSE
OPEN
Replace the board
OK
Q4009~ Q4016
FET
SHORT
Replace the board
OK
X-MAIN
Normal State
Check Logic-main

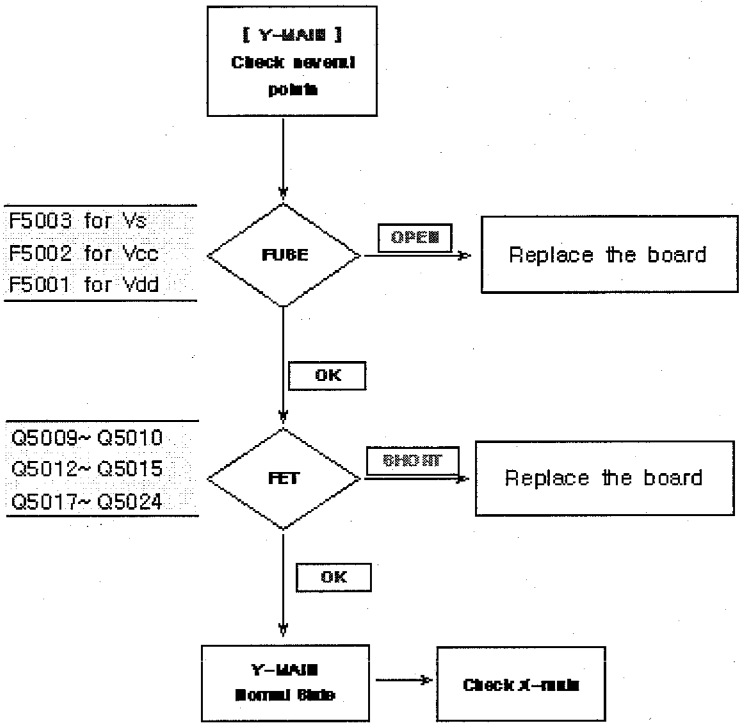

[Logic Main]
LED(LD2000) blinks ?
(action of Vsync)
NG
OK
Replace the board
Logic Main
Normal State
Replace PDP

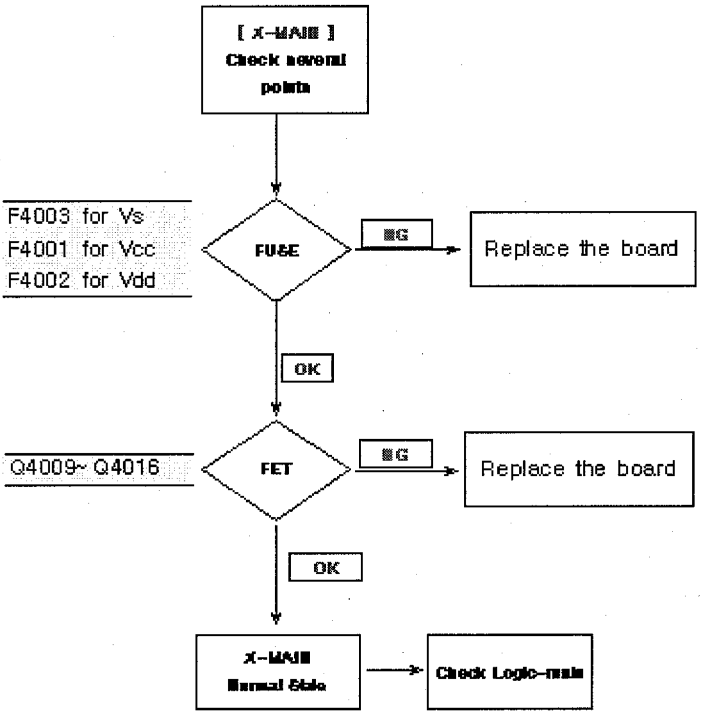
4-1-3 Abnormal Display (Abnormal Image is on Screen. (except abnormality in Sustain or Address)

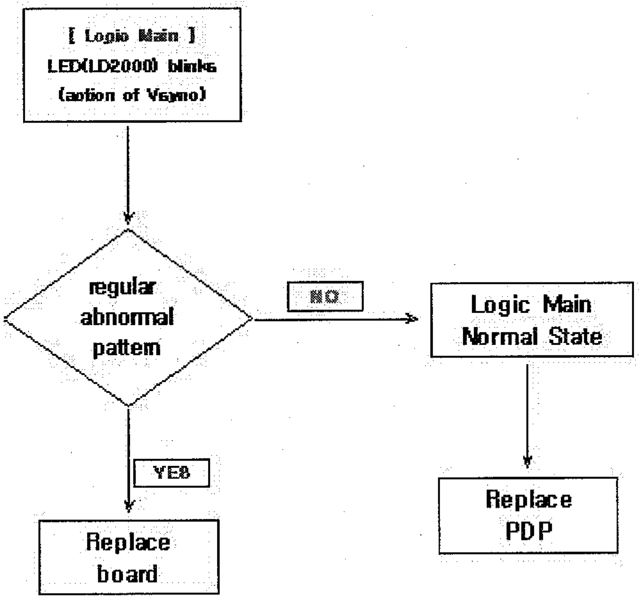
⇒ Abnormal Display is related with Y-MAIN, X-MAIN, Logic Main and so on.

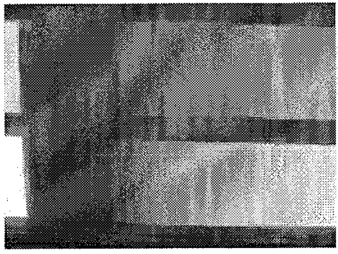
This page shows you how to check the boards, and the following pages show you how to find the defective board.


Abnormal Display
[Logic Main]
Obsevation of abnormal display
[Y-Main]
Check necessary points
[X-Main]
Check necessary points

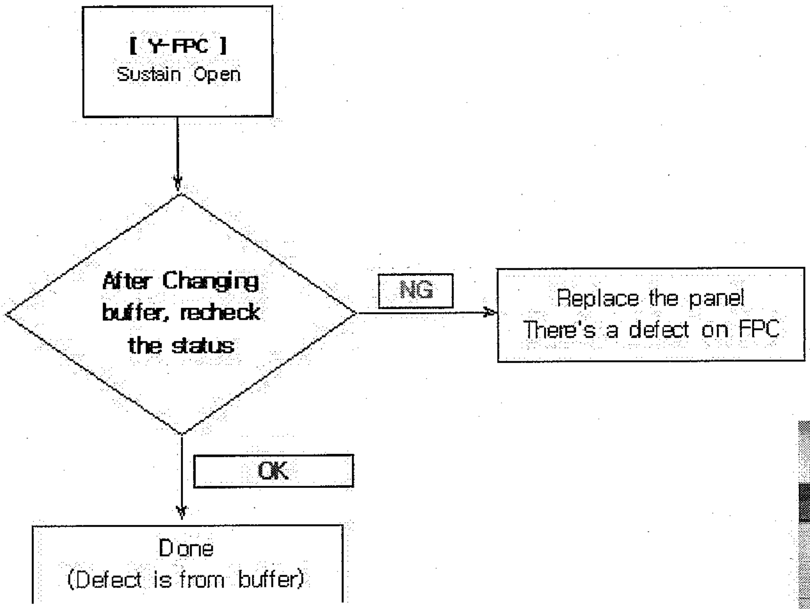

[Y-MAIN]
Check several points
F5003 for Vs
F5002 for Vcc
F5001 for Vdd
FUSE
OPEN
Replace the board
OK
Q5009~ Q5010
Q5012~ Q5015
Q5017~ Q5024
FET
SHORT
Replace the board
OK
Y-MAIN
Normal State
Check X-main

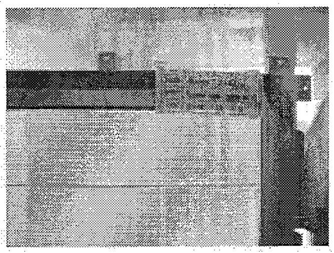

[X-MAIN]
Check several points
F4003 for Vs
F4001 for Vcc
F4002 for Vdd
FUSE
NG
Replace the board
OK
Q4009~ Q4016
FET
NG
Replace the board
OK
X-MAIN
Normal State
Check Logic-main


[Logic Main]
LED(LD2000) blinks
(action of Vsync)
regular abnormal pattern
NO
Logic Main Normal State
Replace PDP
YES
Replace board

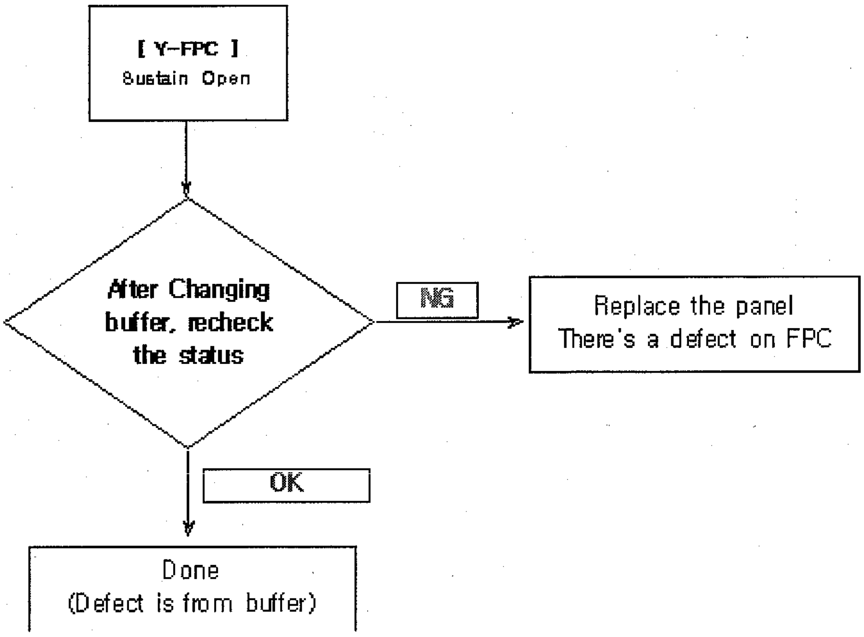


4-1-4 Sustain Open (some horizontal lines don't exist on screen)


[Y-FPC]
Sustain Open
After Changing buffer, recheck the status
NG
Replace the panel
There's a defect on FPC
OK
Done
(Defect is from buffer)



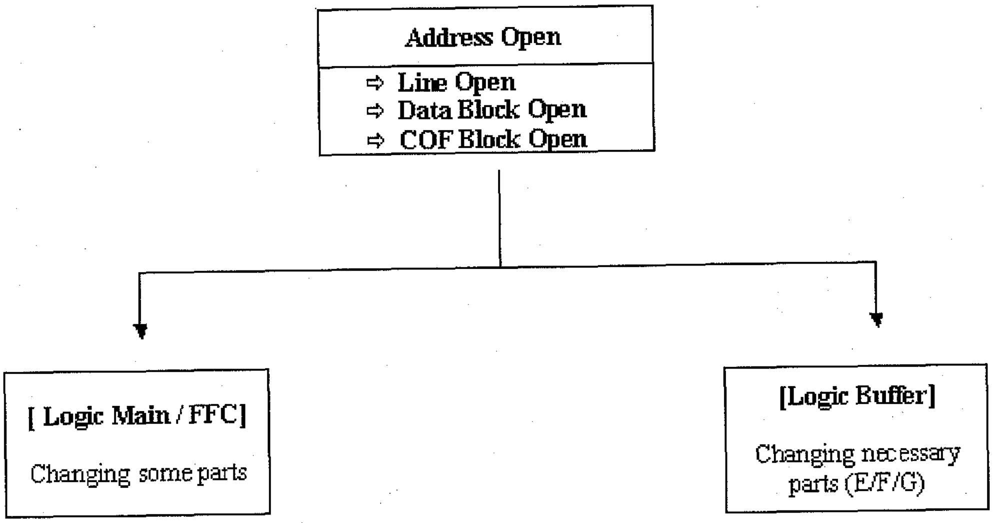
4-1-5 Sustain Short (some horizontal lines appear to be linked on Video)

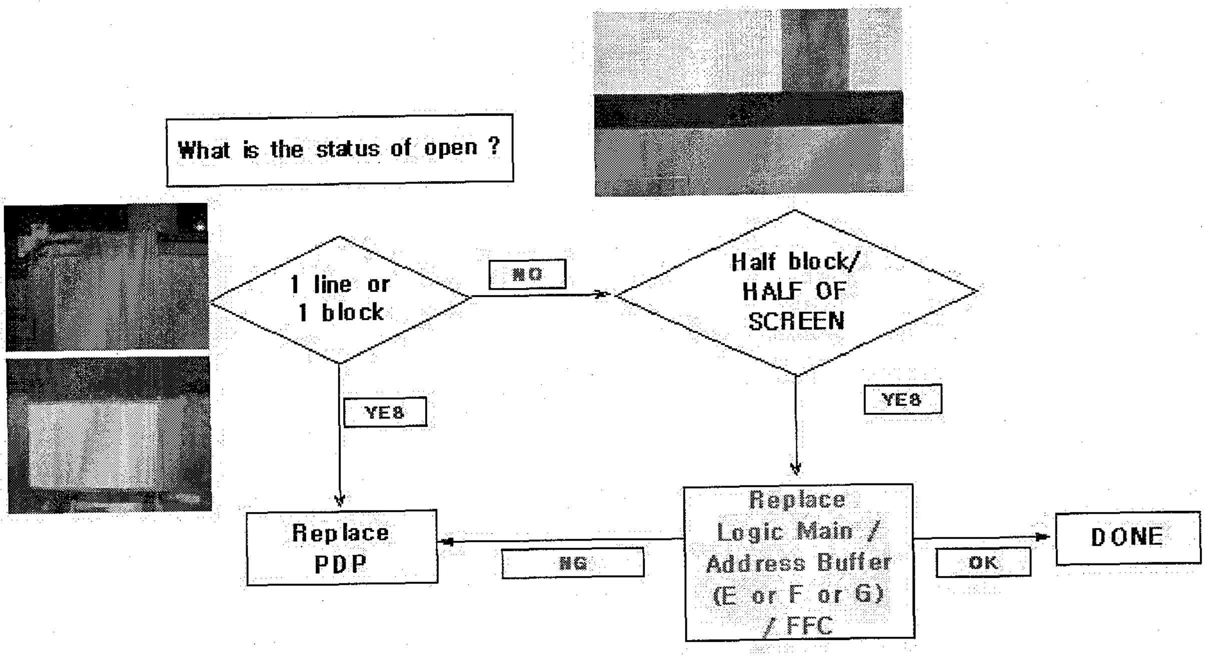

[Y-FPC]
Sustain Open
After Changing buffer, recheck the status
NG
Replace the panel
There's a defect on FPC
OK
Done
(Defect is from buffer)

4-1-6 Address Open (some vertical lines don't exist on screen)

⇒ Address Open is related with Logic Main, Logic Buffer, FFC, TCP and so on.

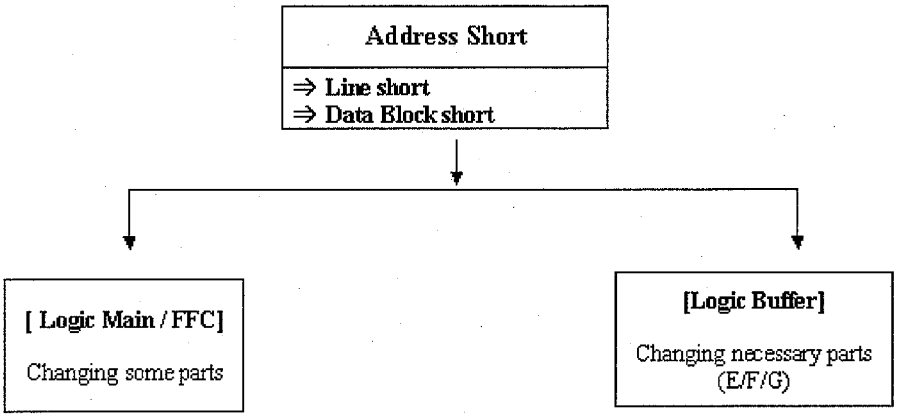
This page shows you how to check the boards, and the following pages show you how to find the defective board.

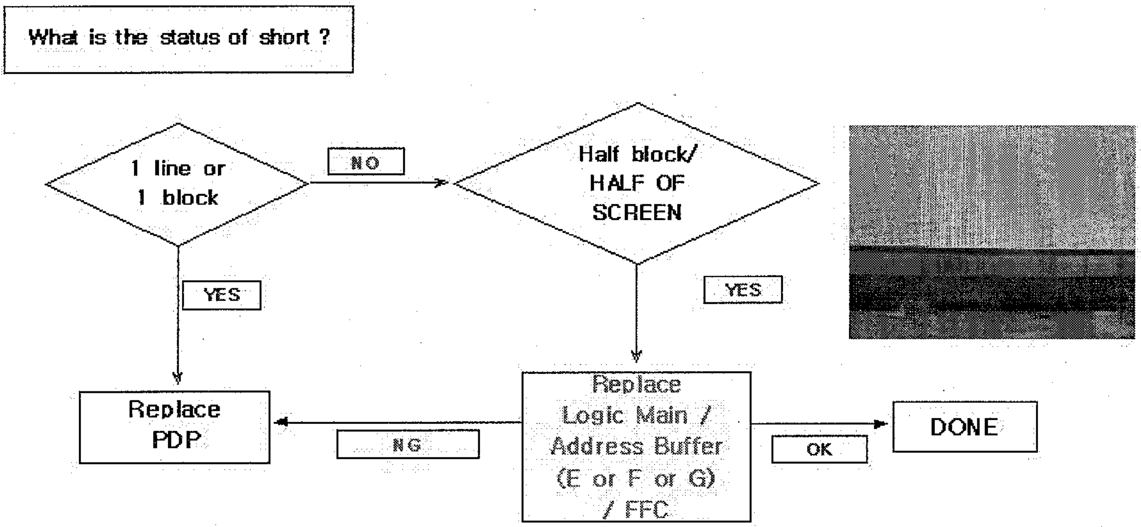

Address Open
⇨ Line Open
⇨ Data Block Open
⇨ COF Block Open
[Logic Main / FFC]
Changing some parts
[Logic Buffer]
Changing necessary parts (E/F/G)


What is the status of open ?
1 line or 1 block
NO
Half block/ HALF OF SCREEN
YES
YES
Replace PDP
NG
Replace Logic Main / Address Buffer (E or F or G) / FFC
OK
DONE

4-1-7 Address Short (some vertical lines appear to be linked on screen

⇒ Address Short is related with Logic Main, Logic Buffer, FFC, TCP and so on.
This page shows you how to check the boards, and the following pages show you how to find the defective board.


Address Short
⇒ Line short
⇒ Data Block short
[Logic Main / FFC]
Changing some parts
[Logic Buffer]
Changing necessary parts (E/F/G)


What is the status of short ?
1 line or 1 block
NO
Half block/ HALF OF SCREEN
YES
YES
Replace PDP
NG
Replace Logic Main / Address Buffer (E or F or G) / FFC
OK
DONE

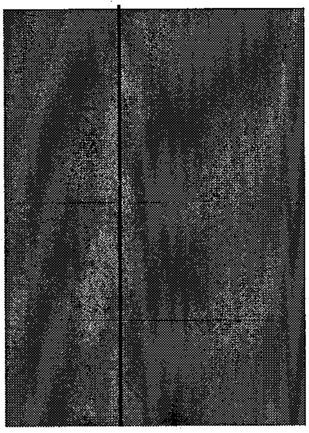
4-2 DEFECTS ,SYMPTONS AND DETECTIVE PARTS

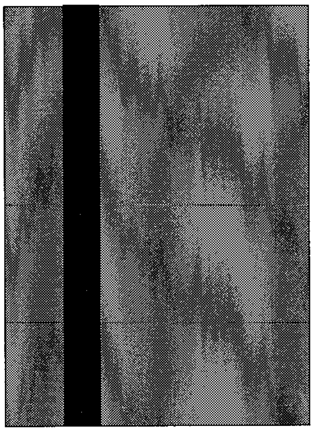
Condition Name	Description	Related Board
■ No Voltage Output	Operating Voltages dont exist.	PSU
■ No Display	Operating Voltages exist, but an Image doesnt exist on screen	Y-MAIN, X-MAIN, Logic Main, Cables
■ Abnormal Display	Abnormal Image (not open or short) is on screen.	Y-MAIN, X-MAIN, Logic Main
■ Sustain Open	some horizontal lines dont exist on screen	Scan Buffer, FPC of X /Y

■ Sustain Short	some horizontal lines appear to be linked on screen	Scan Buffer, FPC of X /Y
■ Address Open	some vertical lines dont exist on screen	Logic Main, Logic Buffer, FFC ,TCP
■ Address Short	some vertical lines appear to be linked on screen	Logic Main, Logic Buffer ,FFC ,TCP

◆ Defect: Address (vertical stripe) Open

Symptom : A line or block does not light up in address electrode direction.(1 line ,block open)



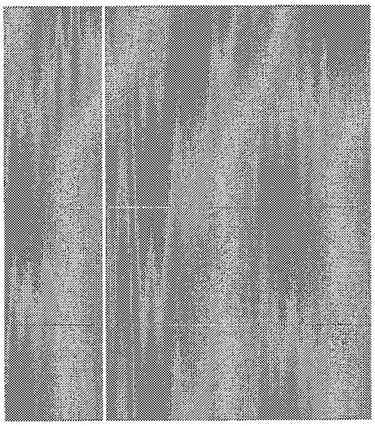


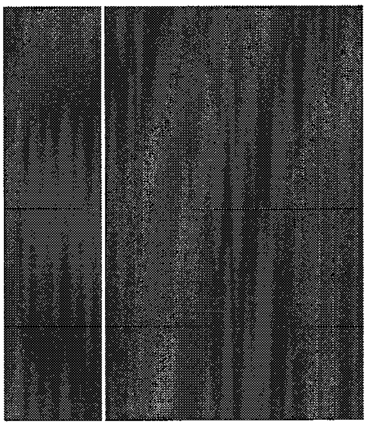
■Cause

① manufacturing : Panel electrode single line/ foreign material/electrostatic/ TCP defect

◆ Defect: Address (vertical stripe) Short

■ Symptom : Another color simultaneously appears because adjacent data recognizes the single pattern signal





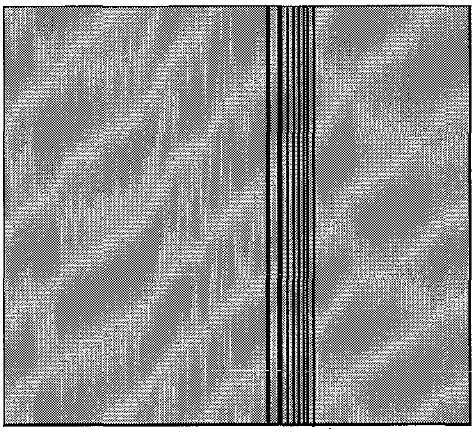
■Cause

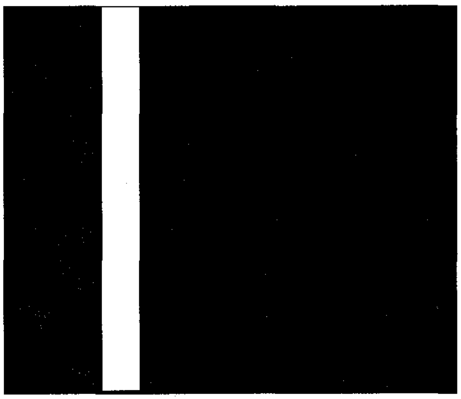
① manufacturing : Panel electrode short/Foreign material conductive foreign object inside TCP

② Parts : TCP, Board connection defect ③ Operation : Assembly error/Film damage	② Part : TCP/buffer defect lighting electrode cutting defect

◆ Defect: Address output error

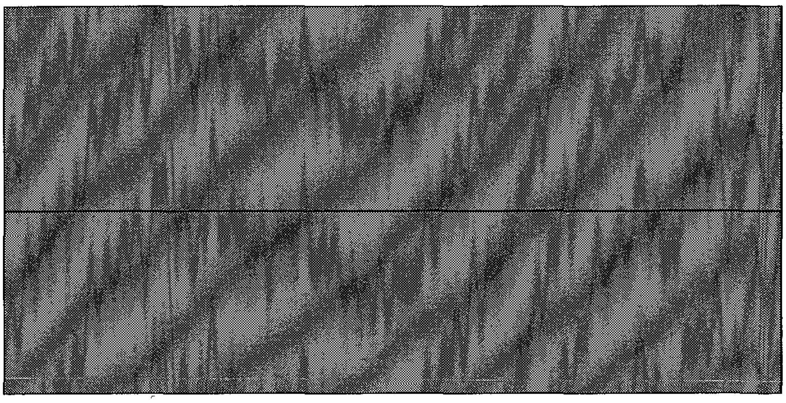
- Symptom .: A defect other than address open
  and short Data printout signal error
  occurring at certain Gradation or pattern



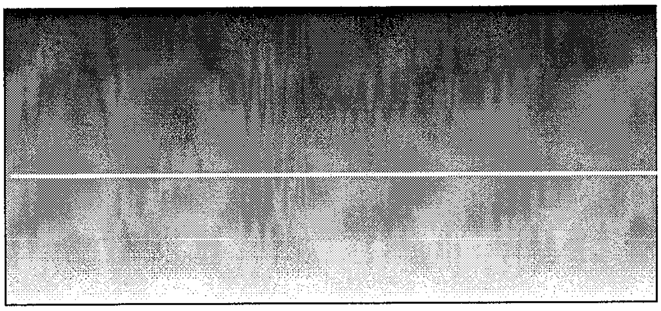
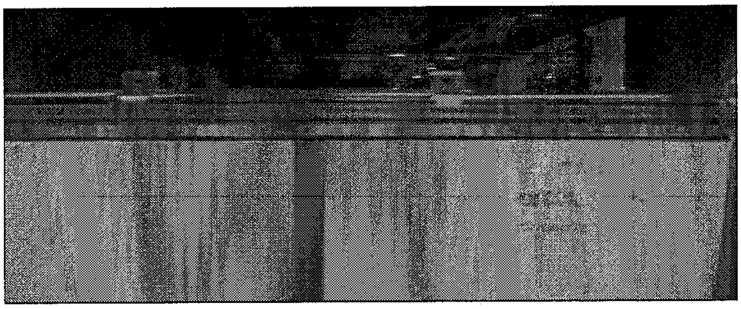


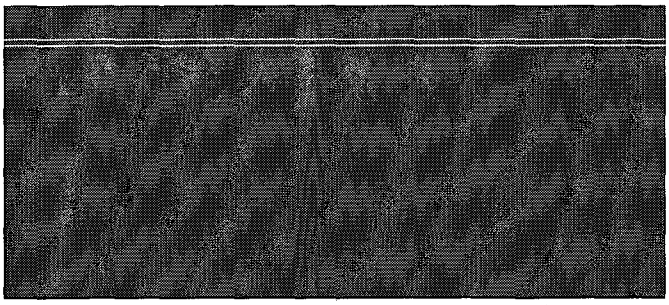
◆ Defect: Sustain (horizontal stripe) Open

- Symptom : One or more line do not light up in Sustain direction



- Cause : ① manufacturing : Panel bus electrode single line
  FPC pressure defect
  ② Parts : FPC /board/connection disconnection
  ③ operation : assembly error.

◆ **Defect: Sustain (horizontal stripe) Short**	◆ **Defect: Dielectric material layer damage**
■ Symptom : Combined or adjacent lines are short in sustain direction. The line appear brighter than other at Ramp gradation pattern or low gradation patter 	■ Symptom : Burn caused by the damage of address bus dielectric layer appears in the panel discharge/non discharge area. sustain also open/short occurs by the damage of address sustain printout  <Add Block and Line Open>

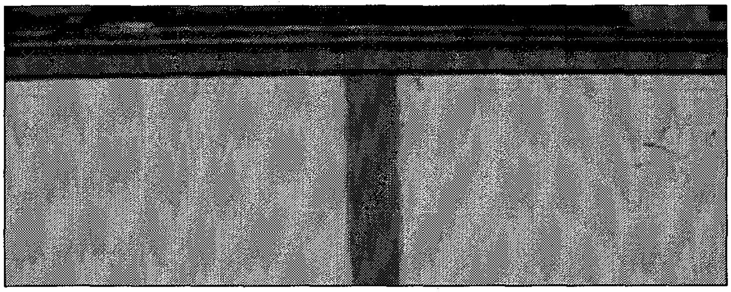


■Cause

① manufacturing : Panel electrode short/Foreign material.

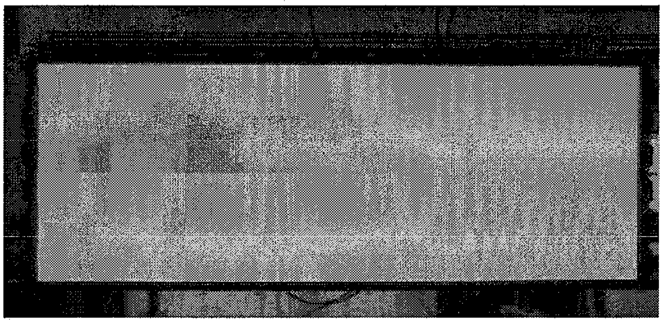
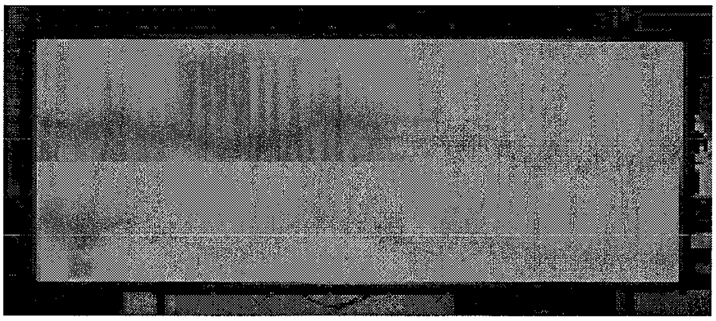
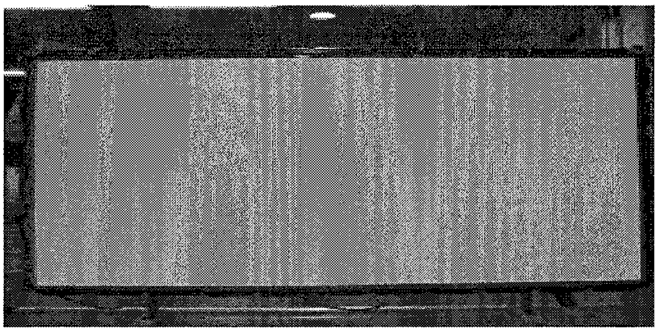
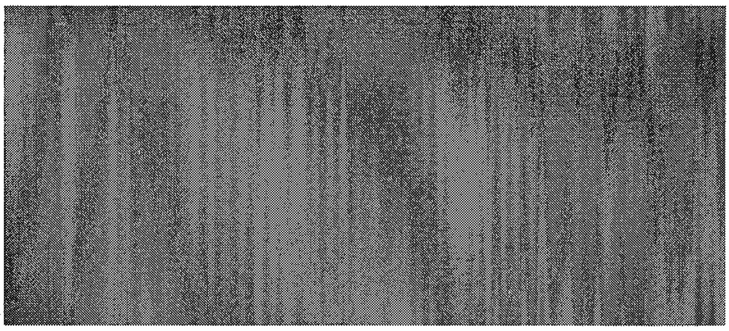
② Parts : Board/connector/pin error

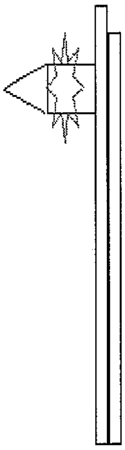
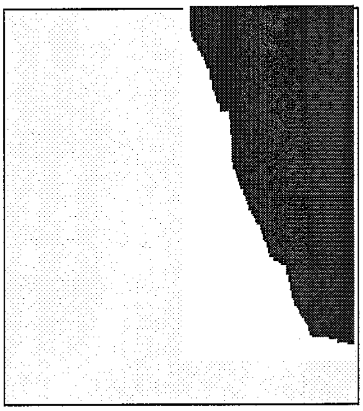
③ Operation : connector/assembling error

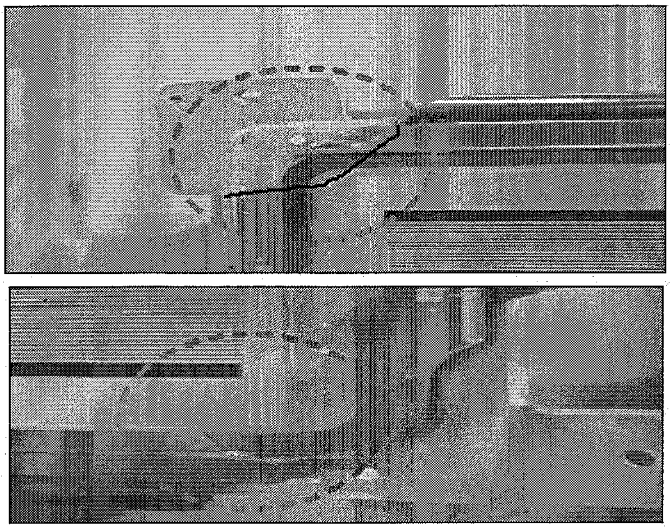


<Add and Sustain Open>

■Cause : layer uneven / abnormal voltage / foreign material repair failed

◆ Defect: F/White low discharge	◆ Defect: Weak discharge
■Symptom : Low discharge caused by unstable cells occurring at full white pattern if high (60 degree) or normal temparature.	■Symptom : Normal discharge but cells appear darker due to weak light emission occurring mainly at low (5 degree) Full white/Red/Green/Blue pattern or gradation pattern
	
	
■ Cause ① Panel : MgO source / dielectric thickness cell pitch/phosphor ② Circuit : drive waveform / voltage condition	■ Cause ① Panel : MgO deposition count and thickness / aging condition ② Circuit : drive waveform / voltage condition

◈ **Defect : panel damage**	◈ **Defect: Exhaust pipe damage**
■ Symptom : Panel crack or break. No image appears in some cause depending on the damaged parts and damage level	■ Symptom . : Crack in break if exhaust pipe an image is partially lacking or the panel noise occurs depending on the damaged parts and with the passage of time  



■ Cause

① Manufacturing : Flatness/palette pin interruption

② Operation : overload of panel corner / careless handling

③ Panel : Flatness / assembly error

■ Cause : Careless panel handling

5. Disassembling / Assembling

5-1 Tools and measurement equipment

5-1-1. Tools

1) (+) type Screw Drivers : to screw the screws
2) Air Blower
3) Earth Ring
4) Small Driver : to adjust potentiometer
5) Dummy Discharge Resistor : 2.4kOhm /10W

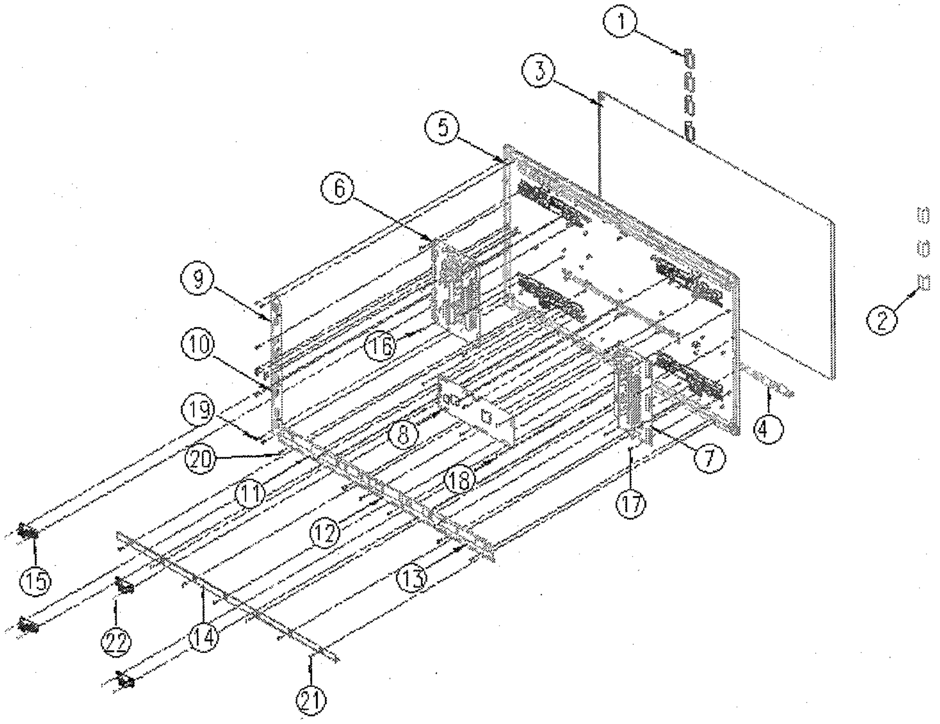
5-1-2. Measuring Equipment

1) Oscilloscope : 500MHz sampling
2) Probe : 10:1

3) Digital Multimeter

4) Signal Generator

5-2 Exploded View

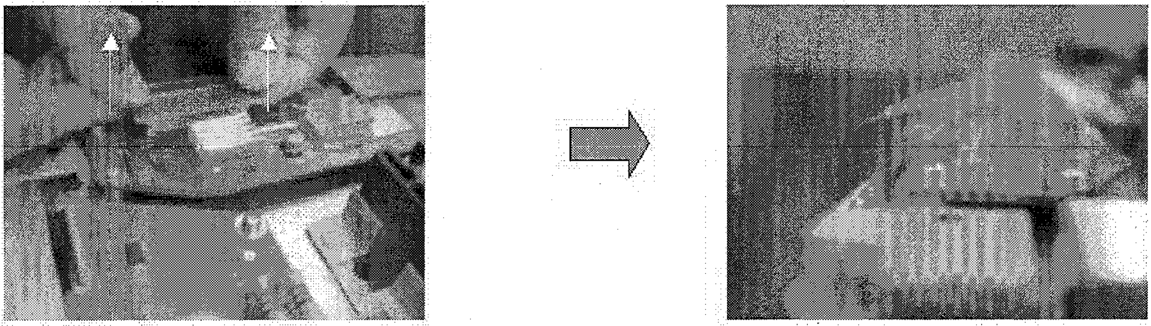

1
3
5
6
9
10
16
19
20
8
11
18
12
13
15
22
14
21
2
4
7
17

항번	P/No	품명	수량	비고
1	LJ94-00002A	Y-FPC	6	42SD,58x61mm(H*V),86LINES,0.6PITCH,80P
2	LJ39-00114A	X-FPC	3	42SD,S2.0,80,1,GOLD,FPC,X-COMMON,FPC,80P
3	DP42SD06C	Panel	1	PANEL:2,SYMMETRY,SINGLE,365X365X365,982X582
4	LJ94-00019A	TCP Film	14	TCP,52.65X55MM,0.25PITCH,STV7620M/S6PR001,UPILEX-S
5	LJ93-00105F	Assy,Chassis Base	1	LJ64-00195B,AL5052,984*584*T2.0
6	LJ92-00944B	Y-Drive	1	42SD V3.1,LJ41-02016A,-,SDI,Y MAIN,310*190*T1.6,TCP
7	LJ92-00943A	X-Drive	1	42SD V3,LJ41-02015A,SEC,SDI,X MAIN,310*140*T1.6
8	LJ92-00975B	Logic-Main	1	42SD V3.1,LJ41-01968A,FGL,SDI,L/MAIN,320*120*T1.6
9	LJ92-00796A	Y-Buffer(UP)	1	S3.0,LJ41-02059A,-,SDI,Y BUFFER UP,253*45*T1.6,V3
10	LJ92-00797A	Y-Buffer(Lower)	1	S3.0,LJ41-02059A,-,SDI,Y BUFFER LO,253*45*T1.6,V3
11	LJ92-00811A	Logic-Buffer(E)	1	42SD,LJ41-01709A,-,SDI,E BUFFER,372*60*T1.6,V3 TCP
12	LJ92-00812A	Logic-Buffer(F)	1	42SD,LJ41-01710A,-,SDI,F BUFFER,123*60*T1.6,V3 TCP
13	LJ92-00813A	Logic-Buffer(G)	1	42SD,LJ41-01711A,-,SDI,G BUFFER,372*60*T1.6,V3TCP
14	LJ93-00120A	TCP Cover Plate	1	LJ63-01613A,LJ02-02061A,LJ02-02062A
15	LJ60-00119A	Spacer Mount	4	42SD V3.1,ABS,L67.5,BLK,T3,W23,FOR_SONY
16	6006-001196	Screw	7	WSP,PH,+,M3,L10,NI PLT,SWRCH10A
17	6006-001196	Screw	8	WSP,PH,+,M3,L10,NI PLT,SWRCH10A
18	6006-001196	Screw	7	WSP,PH,+,M3,L10,NI PLT,SWRCH10A
19	6006-001196	Screw	10	WSP,PH,+,M3,L10,NI PLT,SWRCH10A
20	6006-001196	Screw	15	WSP,PH,+,M3,L10,NI PLT,SWRCH10A
21	6006-001196	Screw	7	WSP,PH,+,M3,L10,NI PLT,SWRCH10A
22	6006-001200	Screw	8	WSP,PH,+,M4,L12,NI PLT,SWRCH18A

5-3 Disassembling & Re-assembling

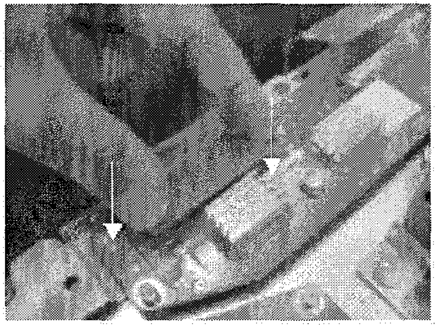
5-3-1 Disassembling & Re-assembling of FPC (Flexible Printed Circuit) and Y-Buffer(Upper and Lower)

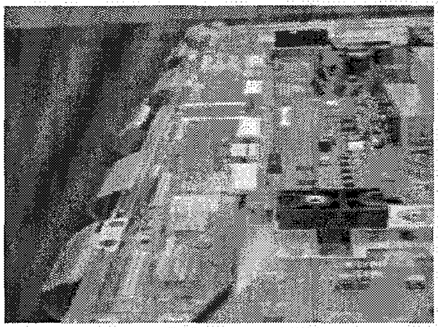
1. Removal procedures



1) Pull out the FPC from Connector by holding the lead of the FPC with hands.

2. Assembling Procedures



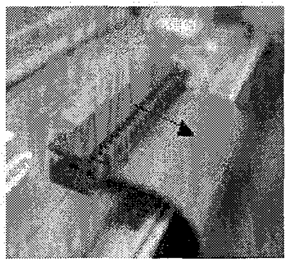


1) Push the lead of FPC with same strength until to be connected completely.

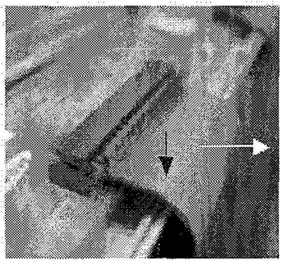
*Notice : Be careful do not get a damage on the connector pin during connecting by mistake.

5-3-2 Assembling & Disassembling of Flat Cable Connector of X-Main Board

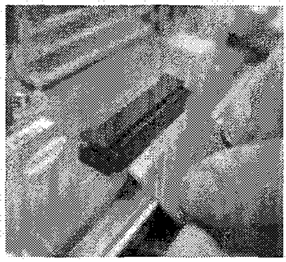
1. Disassembling Procedure



1) Pull out the clamp of connector.

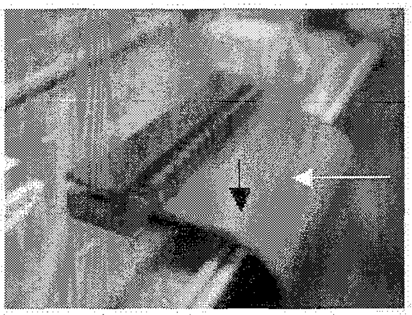


2) Pull Flat cable out press down lightly.



3) Turn the Flat cable reversely.

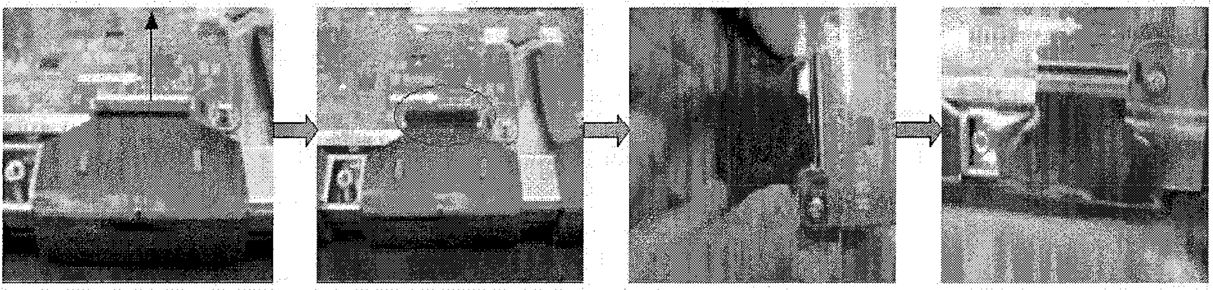
2. Assembling Procedure



1) Put the Flatcable into the connector press down lightly until locking sound ("Dack") comes out.

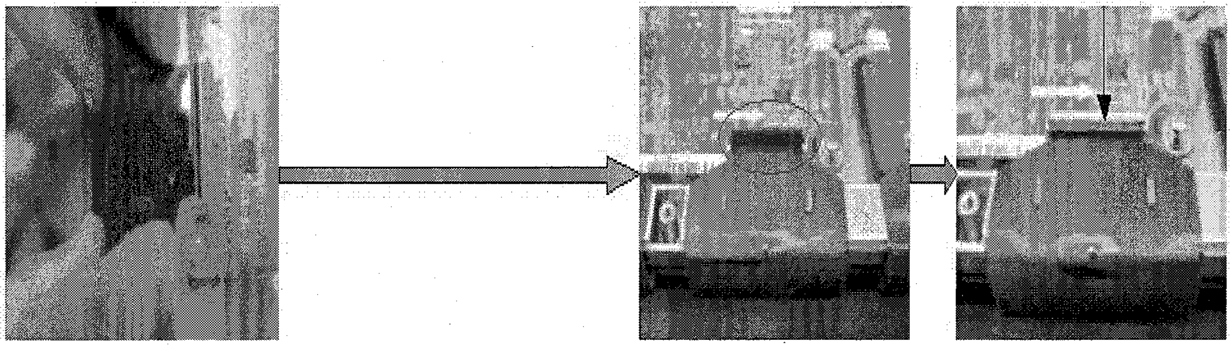
5-3-3 Assembling & Disassembling the FFC and TCP from Connector

1. Disassembling of TCP



1) Open the clamp carefully. 2) Pull the TCP out from Connector.

2. Assembling of TCP



1) Put the TCP into the Connector carefully 2) Close the clamp completely. (The sound ("Dack") comes out.)

* Notice : TCP and Connector was connected surely.

* Notice :

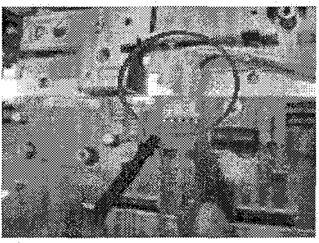
1) Checking whether the foreign material is on the Connector inside before assembling of TCP.

2) Be careful do not get a damage on the board by ESD during handling of TCP.

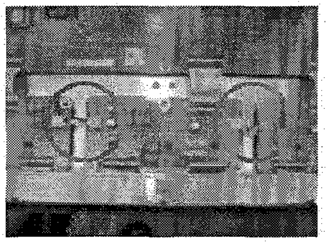
3. Misassembling of TCP

1) The misassembling of TCP is the cause of defect.

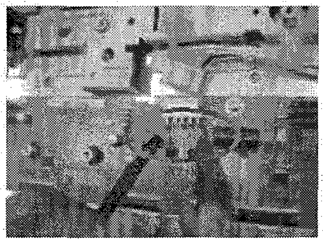
4. Checking method of misassembling of TCP



1) Disconnecting H3 from CN8006 of LBE.



2) Whether H8 and H9 are connected.

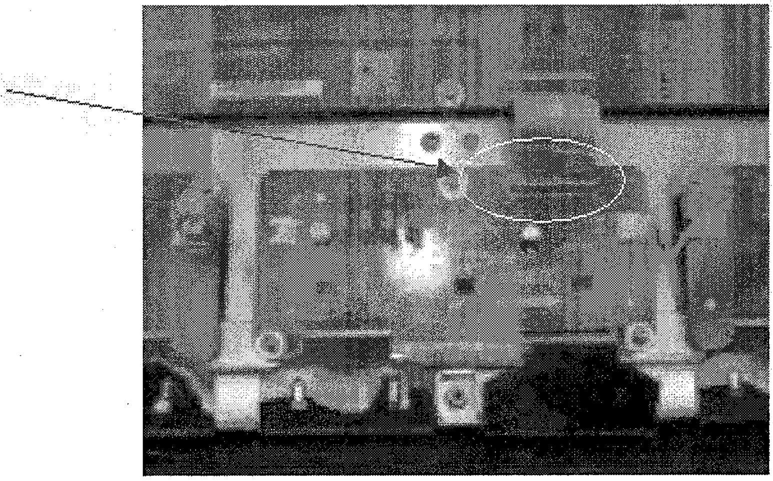


3) Checking the resistance between Pin 1 and 5.

Resistance > a few [K Ohm] : OK

Resistance < 20 Ohm : At least more than 1pc of TCP is wrong.

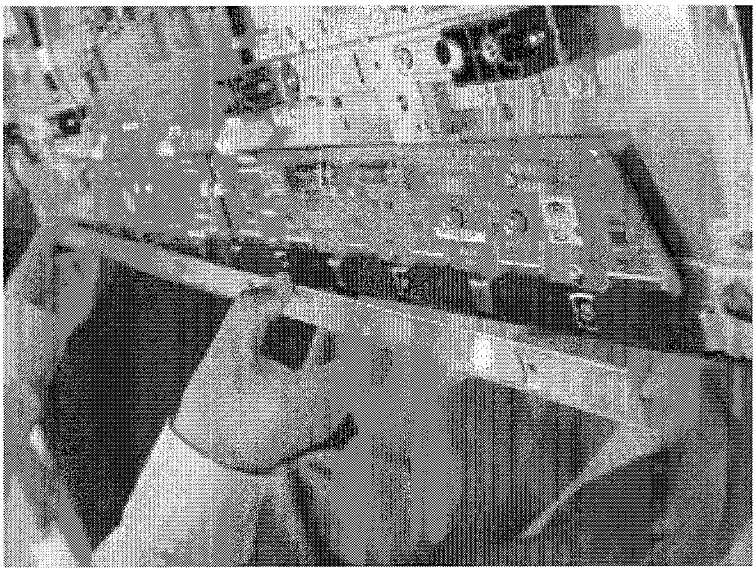
5. Assembling & Disassembling of FFC



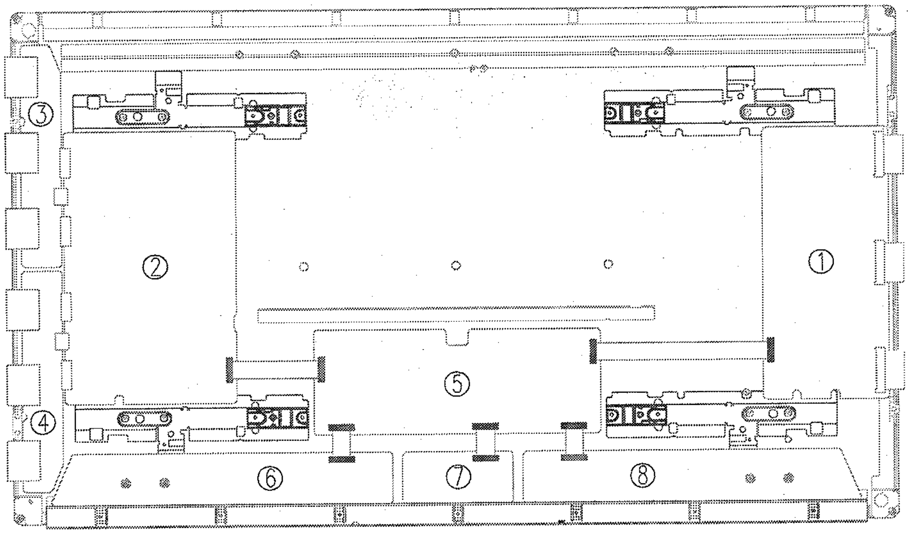
(This is the photo of the assembling of FFC)

The procedure of assembling and disassembling of FFC is the same as TCP.

5-3-4 Exchange of LBE, LBF, LBG board



(Photo 1)



(Photo 2)

1) Remove the screws in order of 2-3-5-7-1-4 from heatsink and then get rid of heatsink. (Photo 1)

2) Remove the TPC, FFC and power cable from the connectors.

3) Remove all of the screws from defected board.

4) Remove the defected board.

5) Replace the new board and then screw tightly.

6) Get rid of the foreign material from the connector.

7) Connect the TCP, FFC and power cable to the connector.

8) Reassemble the TCP heatsink.

9) Screw in order of 4-1-7-6-5-3-2. (Photo 2)

If you screw too tightly, it is possible to get damage on the Driver IC of TCP.

* Logic

5-3-5 Exchange YBU, YBL and YM board

1) Separate all of the FPC connector of YBU (Y-Buffer upper) and YBL (Lower). (Photo 1)

2) Separate all of the connector of CN5001 and CN5008 from Y-Main.

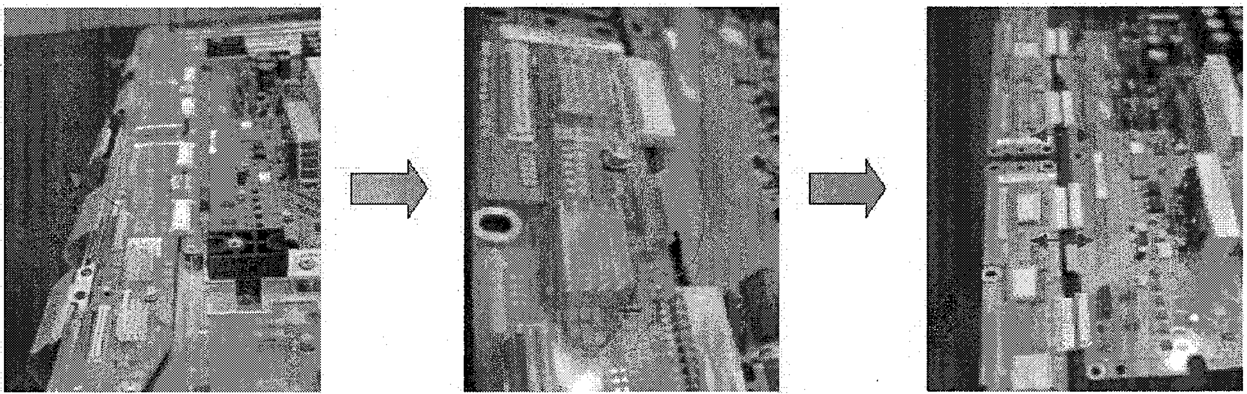
3) Loosen all of the screws of YBU, YBL and YM.

4) Remove the board from chassis.

5) Remove the connector of CN5006 and CN5007 among YBU, YBL and YM.

6) Remove the YBL and YBU from Y-main.

7) Replace the defected board.



8) Reassemble the YBU and YBL to the Y-Main.

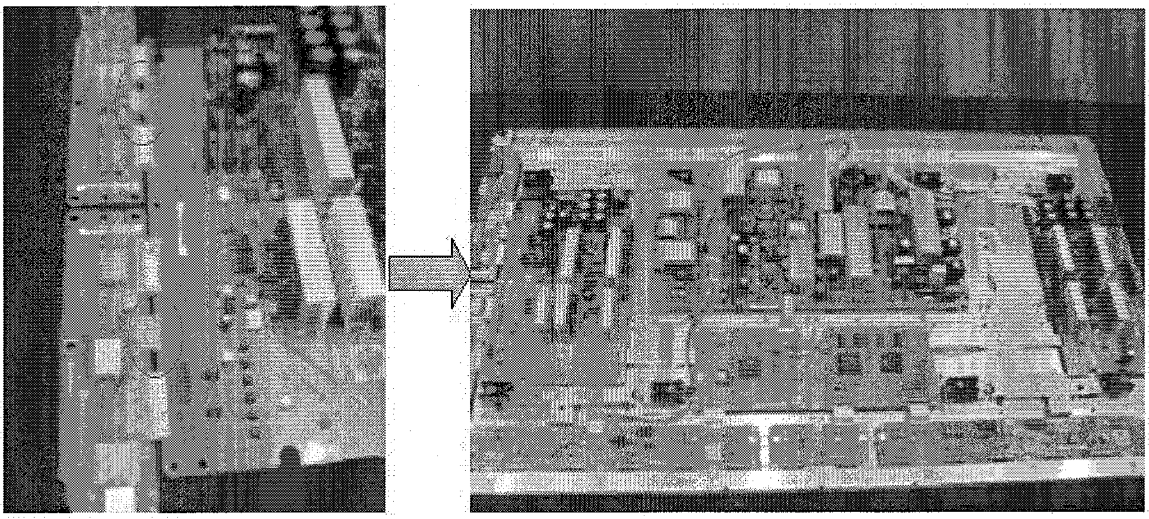
9) Connect the connector of CN5006 and CN5007 among YBU, YBL and YM.

10) Arrange the board on the chassis and then screw to fix.

11) Connect the FPC and YM of panel to the connector.

12) Supply the electric power to the module and then check the waveform of board.

13) Turn off the power after the waveform is adjusted.



6. Operation Check after Repair Service

6-1 Check Item

	Check Item	Specification	Remarks
Module assemble check	TCP Assembling condition	Securely connected or tightened	
	Drive board		
	Y BUFFER		
	Logic & Logic Buffer		
	Harness	Securely connected	
	Material Mixing	No material mixing	

6-2 Check Procedure

1) Visual check as following

a. Assembling condition of module.

b. No problem on the connection of module.

c. The grounding and easily short-circuited parts are not damaged.

2) Check the Dip Switch is located module inside.

3) Turn on the power to PDP module, and then check that LED lights up and the SET is working well.

4) Check the power voltage after turn on the power, and then check the Display condition by tapping slightly the Y-FPC 2 or 3 times.

5) Check whether something wrong during Full White Pattern period.

6) If something wrong, each voltage should be set to the standard voltage by using Multi-Tester and adjusting tools.

7) Adjust the waveform, using Oscilloscope for the waveform adjusting point.

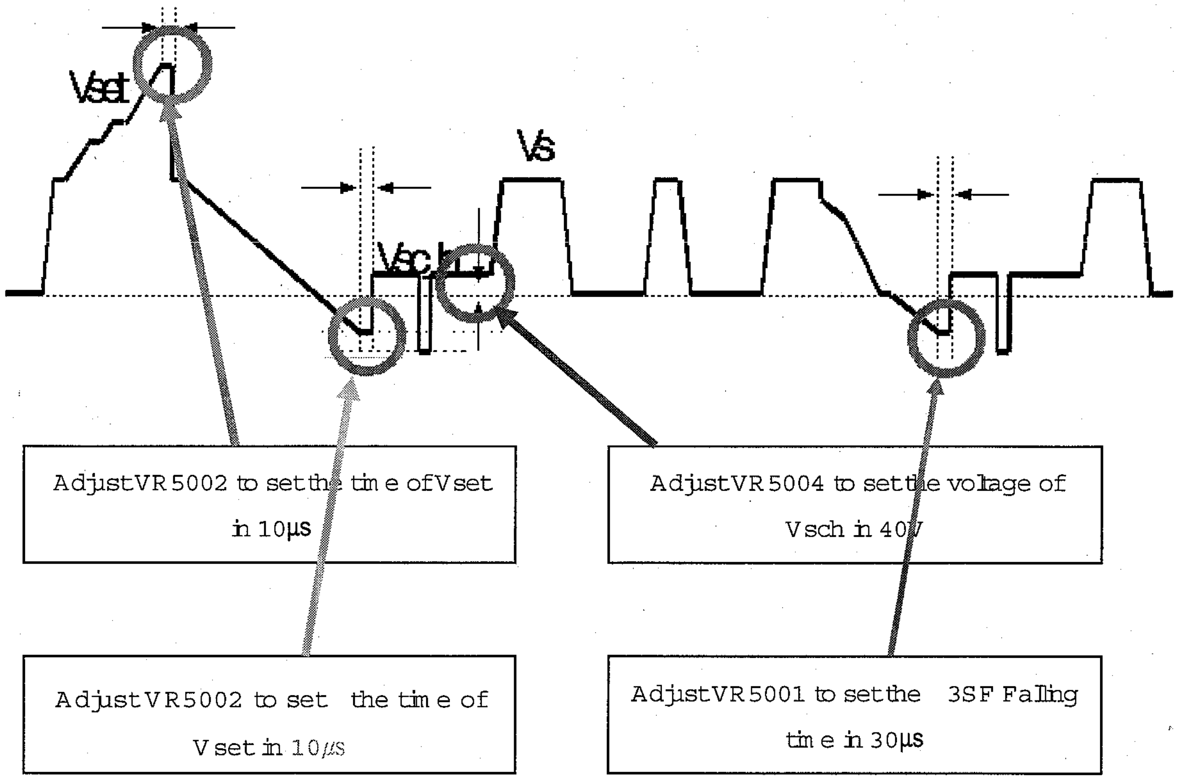
8) Check the discharge of front panel by changing the image for each pattern.

9) Check the Low-discharge, Over-discharge and panel condition by adjusting the Pattern Generator Level.

7. Operation Check

7-1 Adjustment Specification, Checking Position etc.

V3.1 TCP Ramp Waveform Inclination Adjustment (Y-Board)



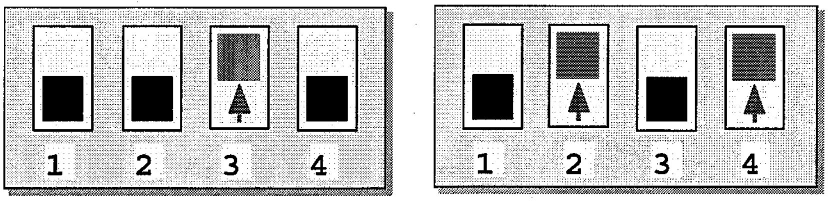
Adjust VR5002 to set the time of Vset in 10μs

Adjust VR5004 to set the voltage of Vsch in 40V

Adjust VR5002 to set the time of Vset in 10μs

Adjust VR5001 to set the 3SF Falling time in 30μs

*Dip Switch Mode



< Internal> <External>

7-2 Adjusting procedure

1) Get Pattern to be Full White.

2) Adjust Vsch to 40V by using VR5004 (Vsch should be connected to "+" unit of Multimeter).

Vsch is over 95V than Vsc_1

3) Check the waveform using Oscilloscope.

① Triggering through V_TOGG of LOGIC Board.

② Connect the OUT 4 Test Point at the center of Y_buffer to other channel, and then check the first SF operating waveform of 1TV-Field.

③ Check the waveform as before by adjusting Horizontal Division.

Check the Reset waveform when the V_TOGG Level is changed.

④ Set the Vset to 10us by adjusting VR5002.

GND maintenance section should be checked after the Vertical Division is readjusted to 2V or 5V'.

⑤ Set the Falling maintenance time to 30us by adjusting R5003.

⑥ Change the waveform position of Oscilloscope to 3SF and then set the Falling maintenance time to 30us by adjusting the VR5001.

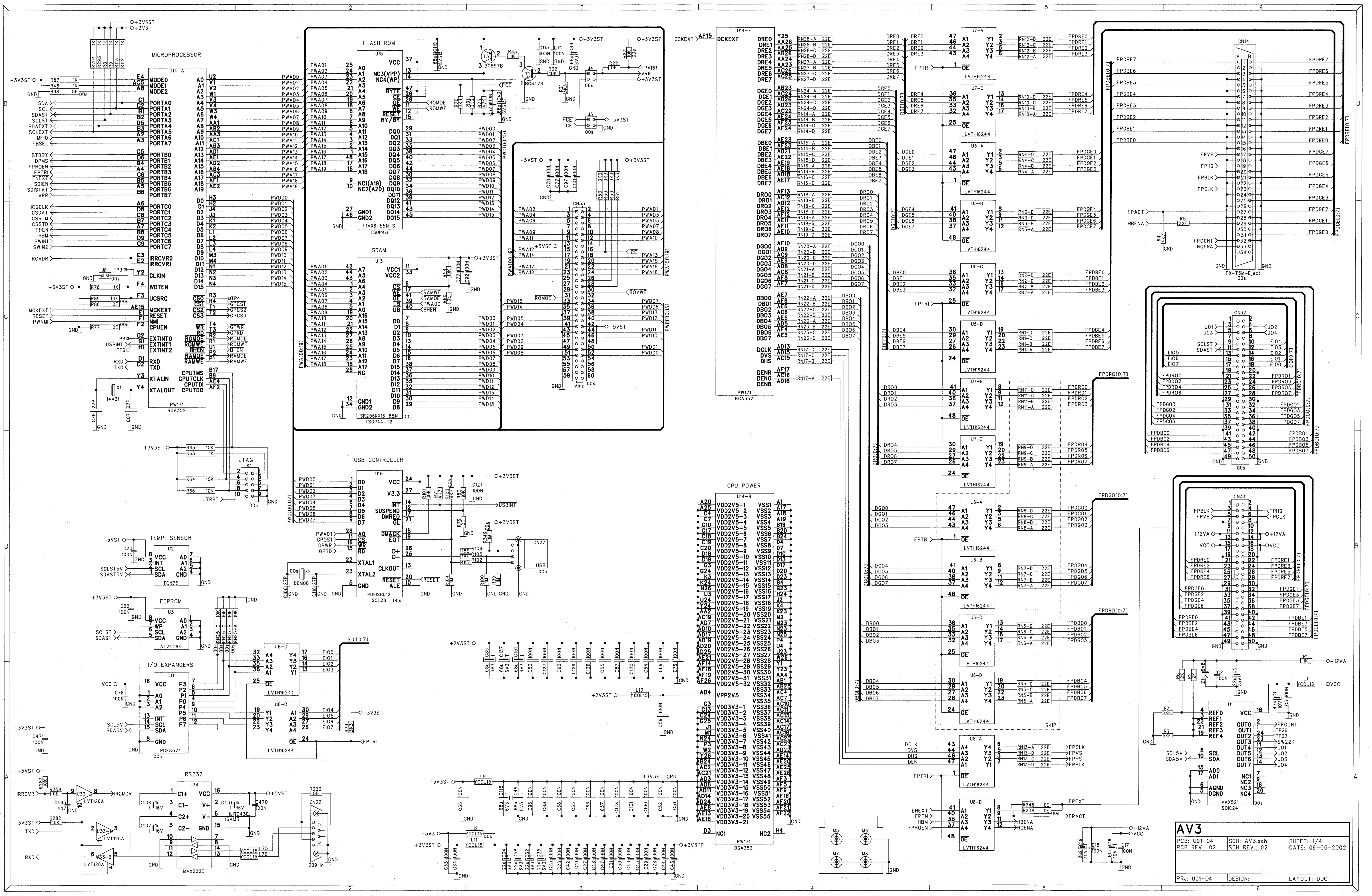
GND maintenance section should be checked after the Vertical Division is readjusted to 2V or 5V'.

※ Special Notice

When you adjust the inclination of waveform, do check and adjustment being based on the Reset waveform of 1st Sub-field of 1st Frame and then move to 3rd Sub-field for adjusting.

8. SPARE PART LIST FOR THE PANEL

Beko Part Code	Part Definition
X53.101	PCB ASSY X MAIN ASSY (LJ92-00943A)
X53.102	PCB ASSY LOGIC-BUFFER (E) (LJ92-00811A)
X53.103	PCB ASSY LOGIC-BUFFER (F) SDI42V3 (LJ92-00812A)
X53.104	PCB ASSY LOGIC-BUFFER (E) SDI42V3 (LJ92-00813A)
X53.105	PCB ASSY Y-BUFFER (UP) SDI42V3 (LJ92-00796A)
X53.106	PCB ASSY Y-BUFFER (DOWN) SDI42V3 (LJ92-00797A)
X53.107	PCB ASSY LOGIC-BOARD SDI42V3 (LJ92-00975E)
X53.108	PCB ASSY SMPS (PSU) SDI42V3 (LJ44-00068A)
X53.109	PCB ASSY Y-BOARD SDI42V3 (LJ92-00944B)
X51.112	FPC 58x61mm (H*V),86LINES,0.6PITCH,80P (LJ94-00002A)
X51.113	FFC CABLE-FLAT LOGIC-XBOARD (3809-001396) 60V,105C,210MM,30P,0.5MM,UL20861
X51.115	FFC CABLE-FLAT LOGIC-YBOARD (3809-001397) 60V,105C,105MM,40P,0.5MM,UL20861
X53.116	FFC CABLE-FLAT 42V3 LOGIC-L-BUFFER (3809-001414)
X53.116	FFC CABLE-FLAT 42V3 LOGIC-L-BUFFER (3809-001414)
X53.116	FFC CABLE-FLAT 42V3 LOGIC-L-BUFFER (3809-001414)
X53.117	CABLE SMPS-LOGIC 42V3 (LJ39-00143A)
X53.118	CABLE SMPS-L BUFFER (E) 42V3 (LJ39-00140A)
X53.119	CABLE SMPS-XBOARD 42V3 (LJ39-00179A)
X53.120	CABLE SMPS-YBOARD 42V3 (LJ39-00142A)
X51.120	CABLE L BUFFER-L BUFFER (LJ39-00109A)
X51.120	CABLE L BUFFER-L BUFFER (LJ39-00109A)


MICROPROCESSOR
U14-A
PW171
BGA352
FLASH ROM
U15
F1MX8-55N-S
TSOP48
SRAM
U13
SR256KX16-85N
TSOP44-T2
JTAG
K1
TEMP. SENSOR
U2
TCN75
EEPROM
U3
AT24C64
I/O EXPANDERS
U11
PCF8574
RS232
U34
MAX232E
DB9 M
USB CONTROLLER
U18
PDIUSBD12
SOL28
CN27
USB
CPU POWER
U14-B
PW171
BGA352
U14-E
PW171
BGA352
CN35
Mole
CN14
FX-T5M-Eject
CN32
CN33
U1
MAX521
SOIC24
SKIP
LVTH16244
+3V3ST
+5VST
+2V5ST
+12VA
VCC
GND

AV3

PCB: U01-04
PCB REV.: 02

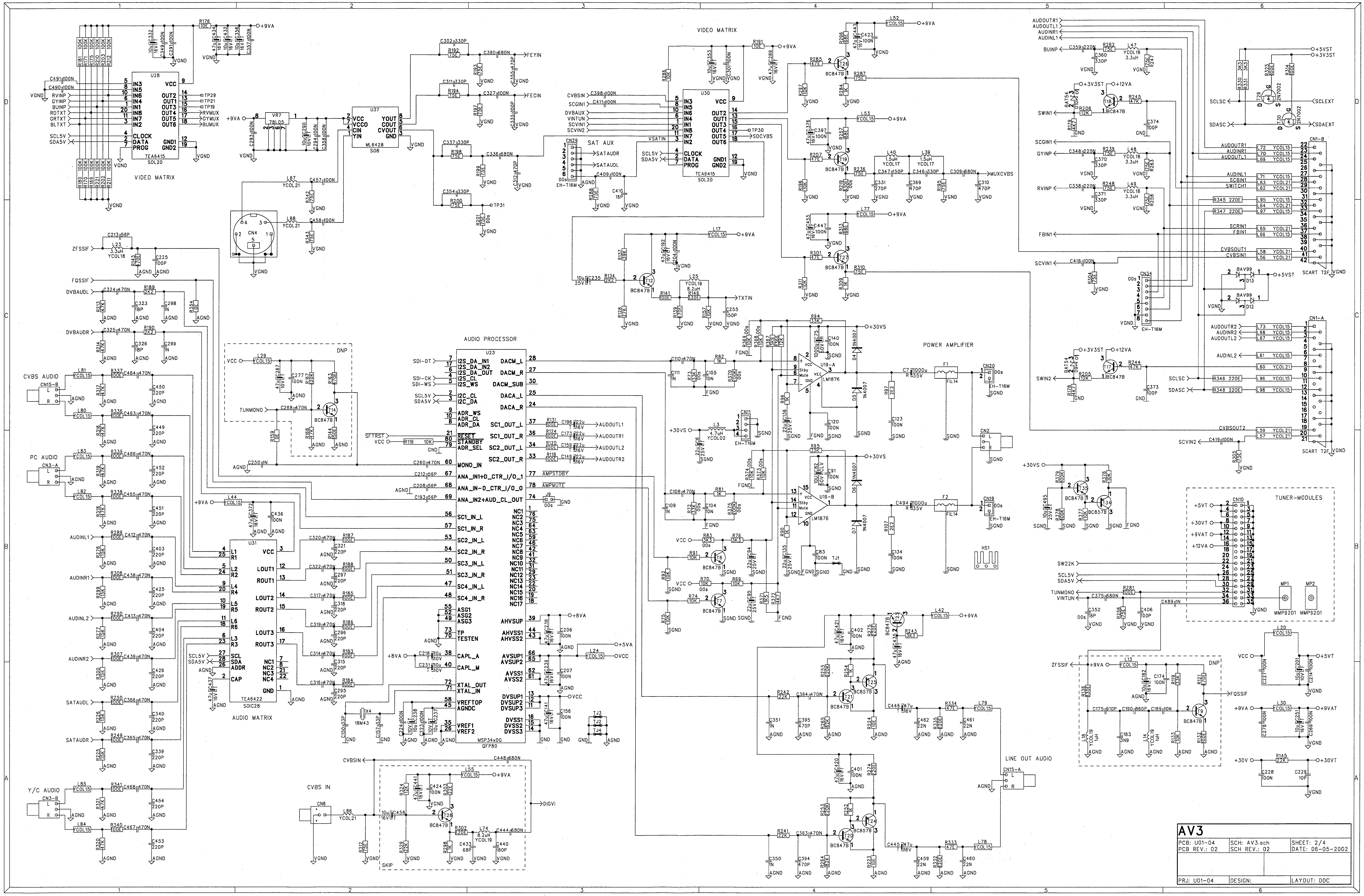
SCH: AV3.sch
SCH REV.: 02

SHEET: 1/4
DATE: 06-05-2002

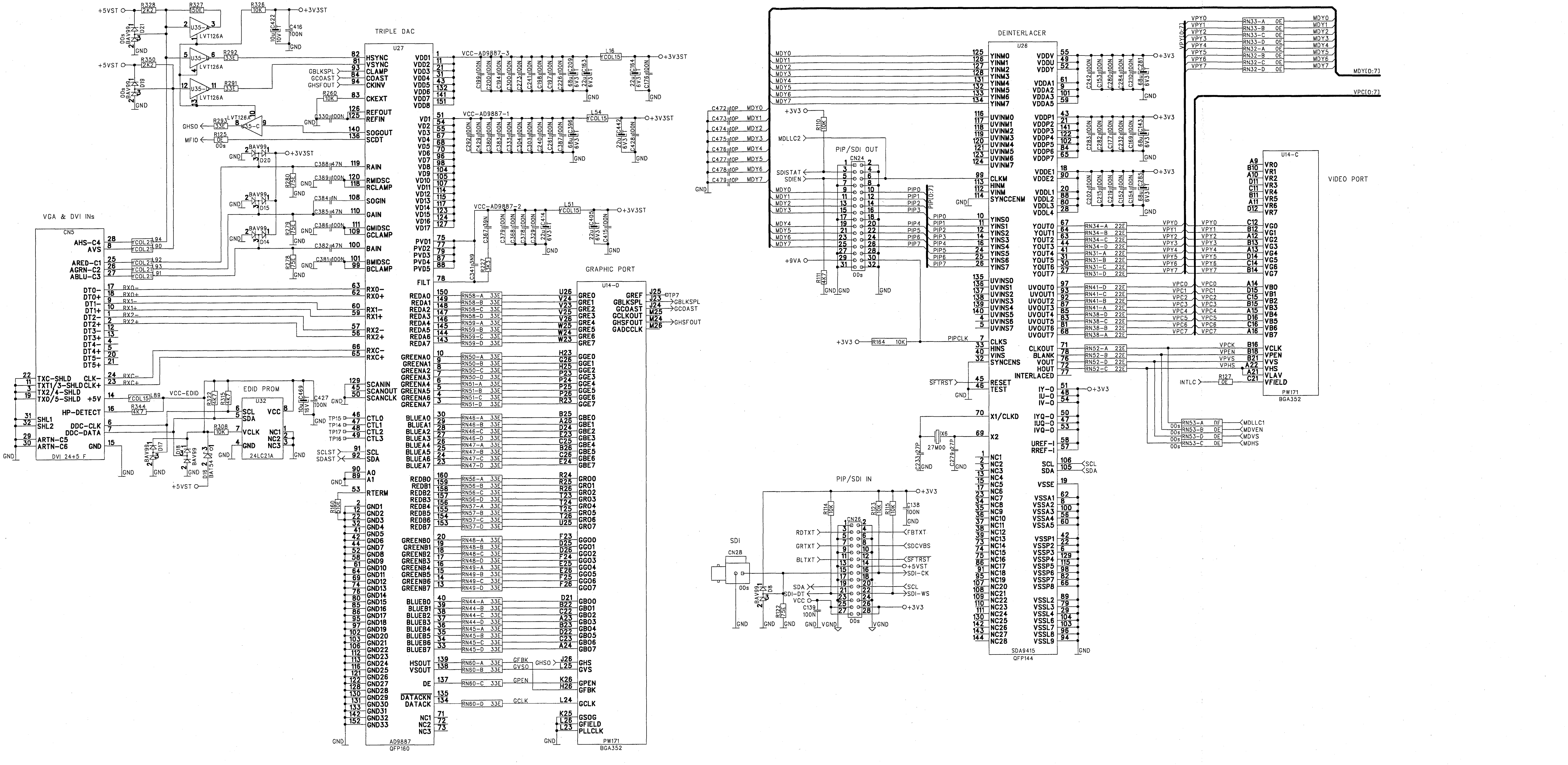
PRJ: U01-04

DESIGN:

LAYOUT: DDC


VIDEO MATRIX
U28
TEA6415
SOL20
U37
ML6428
SO8
VR7
78L05
CN4
SAT AUX
CN29
EH-T16M
U30
TEA6415
SOL20
VIDEO MATRIX
AUDIO PROCESSOR
U23
MSP34x0G
QFP80
DNP
POWER AMPLIFIER
U19-A
LM1876
U19-B
LM1876
F1
FIL14
F2
FIL14
HS1
CVBS AUDIO
CN15-B
PC AUDIO
CN3-A
Y/C AUDIO
CN3-B
AUDIO MATRIX
U31
TEA6422
SOIC28
CVBS IN
CN6
SKIP
LINE OUT AUDIO
CN15-A
SCART T2F
CN1-B
CN1-A
CN34
TUNER-MODULES
CN10
MP1
MMP9201
MP2
MMP9201
DNP
+9VA
+5VA
+8VA
+30VS
+5VST
+3V3ST
+12VA
VCC
VGND
AGND
SGND
FGND

AV3		
PCB: U01-04	SCH: AV3.sch	SHEET: 2/4
PCB REV.: 02	SCH REV.: 02	DATE: 06-05-2002
PRJ: U01-04	DESIGN:	LAYOUT: DDC


VGA & DVI INs
CN5
DVI 24+5 F
EDID PROM
U32
24LC21A
TRIPLE DAC
U27
AD9887
QFP160
GRAPHIC PORT
U14-D
PW171
BGA352
DEINTERLACER
U26
SDA9415
QFP144
PIP/SDI OUT
CN24
PIP/SDI IN
CN26
SDI
CN28
VIDEO PORT
U14-C
PW171
BGA352
U35
LVT126A
+5VST
+3V3ST
+3V3
+9VA
GND
VGND
MDY[0:7]
VPC[0:7]
VPY[0:7]
PIP[0:7]
VCC-AD9887-1
VCC-AD9887-2
VCC-AD9887-3
VCC-EDID
HSYNC
VSYNC
CLAMP
COAST
CKINV
CKEXT
REFOUT
REFIN
SOGOUT
SCDT
RAIN
RMIDSC
RCLAMP
SOGIN
GAIN
GMIDSC
GCLAMP
BAIN
BMIDSC
BCLAMP
RX0-
RX0+
RX1-
RX1+
RX2-
RX2+
RXC-
RXC+
SCANIN
SCANOUT
SCANCLK
CTL0
CTL1
CTL2
CTL3
SCL
SDA
A0
A1
RTERM
FILT
HSOUT
VSOUT
DE
DATACKN
DATACK
GREF
GBLKSPL
GCOAST
GCLKOUT
GHSFOUT
GADCCLK
GHS
GVS
GPEN
GFBK
GCLK
GSOG
GFIELD
PLLCLK
YINM0
UVINM0
CLKM
HINM
VINM
SYNCCENM
YINS0
UVINS0
CLKS
HINS
VINS
SYNCENS
RESET
TEST
X1/CLKD
X2
27M00
YOUT0
UVOUT0
CLKOUT
BLANK
VOUT
HOUT
INTERLACED
SDISTAT
SDIEN
MDLLC2
SFTRST
PIPCLK
RDTXT
GRTXT
BLTXT
FBTXT
SDCVBS
SDI-CK
SDI-WS
SDI-DT
VCLK
VPEN
VVS
VHS
VLAV
VFIELD
INTLC
MDLLC1
MDVEN
MDVS
MDHS
GHSO
MFIO

AV3

PCB: U01-04
PCB REV.: 02

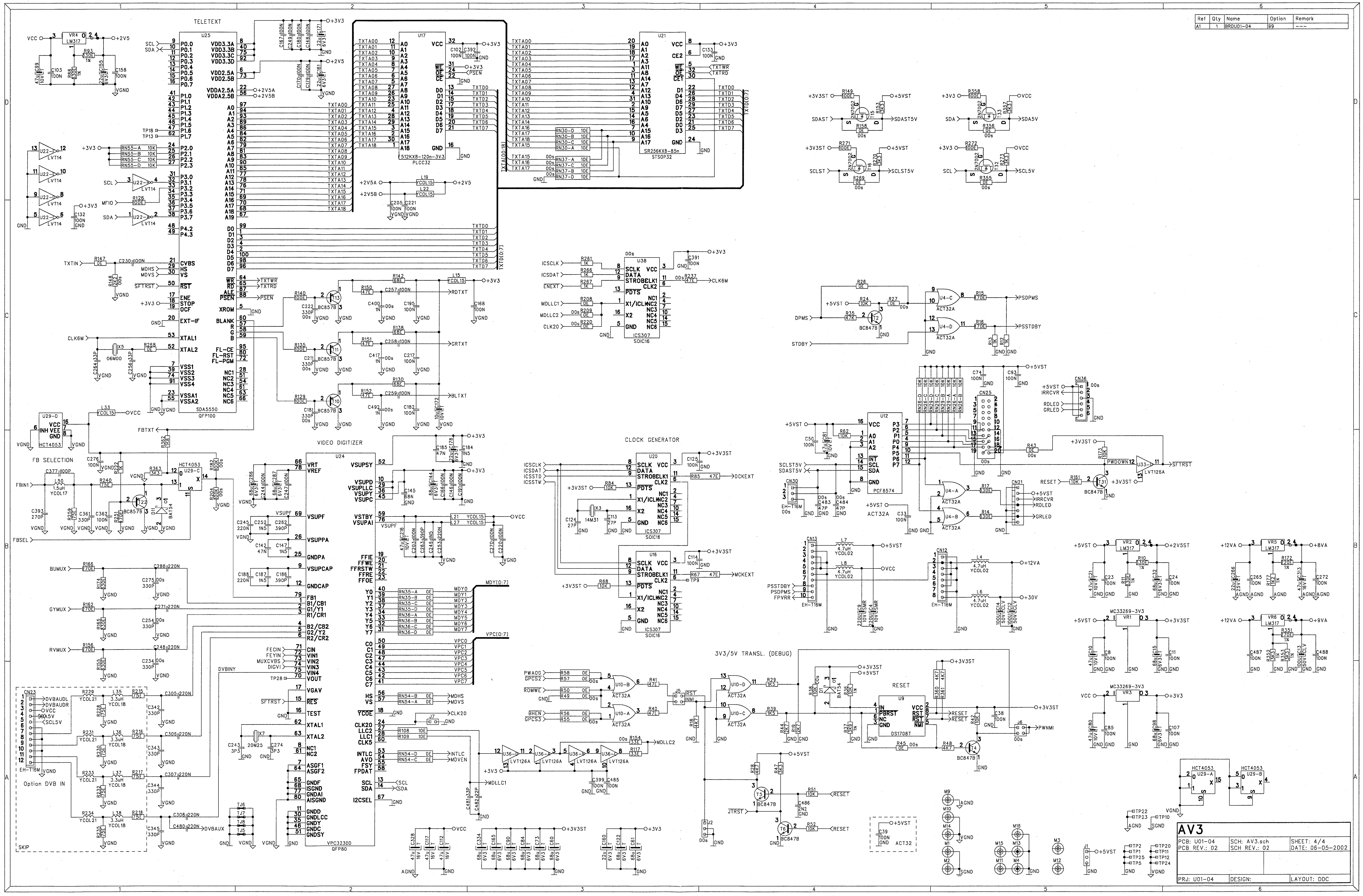
SCH: AV3.sch
SCH REV.: 02

SHEET: 3/4
DATE: 06-05-2002

PRJ: U01-04

DESIGN:

LAYOUT: DDC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SDA5550
QFP100
U17
F512KX8-120n-3V3
PLCC32
U21
SR256KX8-85n
STSOP32
VIDEO DIGITIZER
U24
VPC3230D
QFP80
FB SELECTION
U29-D
HCT4053
U29-C
HCT4053
Option DVB IN
CN23
EH-T16M
SKIP
CLOCK GENERATOR
U20
ICS307
SOIC16
U16
ICS307
SOIC16
U38
ICS307
SOIC16
3V3/5V TRANSL. (DEBUG)
RESET
U9
DS1708T
U12
PCF8574
U4-A
U4-B
U4-C
U4-D
ACT32A
U10-A
U10-B
U10-C
U10-D
U36-A
U36-B
U36-C
U36-D
LVT126A
U33-
LVT126A
U22-
LVT14
VR1
MC33269-3V3
VR2
LM317
VR3
MC33269-3V3
VR4
LM317
VR5
LM317
VR6
LM317
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CN13
CN21
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CN30
CN36
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U29-B
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TXTA[00:18]
MDY[0:7]
VPC[0:7]
ACT32

AV3

PCB: U01-04 PCB REV.: 02	SCH: AV3.sch SCH REV.: 02	SHEET: 4/4 DATE: 06-05-2002
PRJ: U01-04	DESIGN:	LAYOUT: DDC

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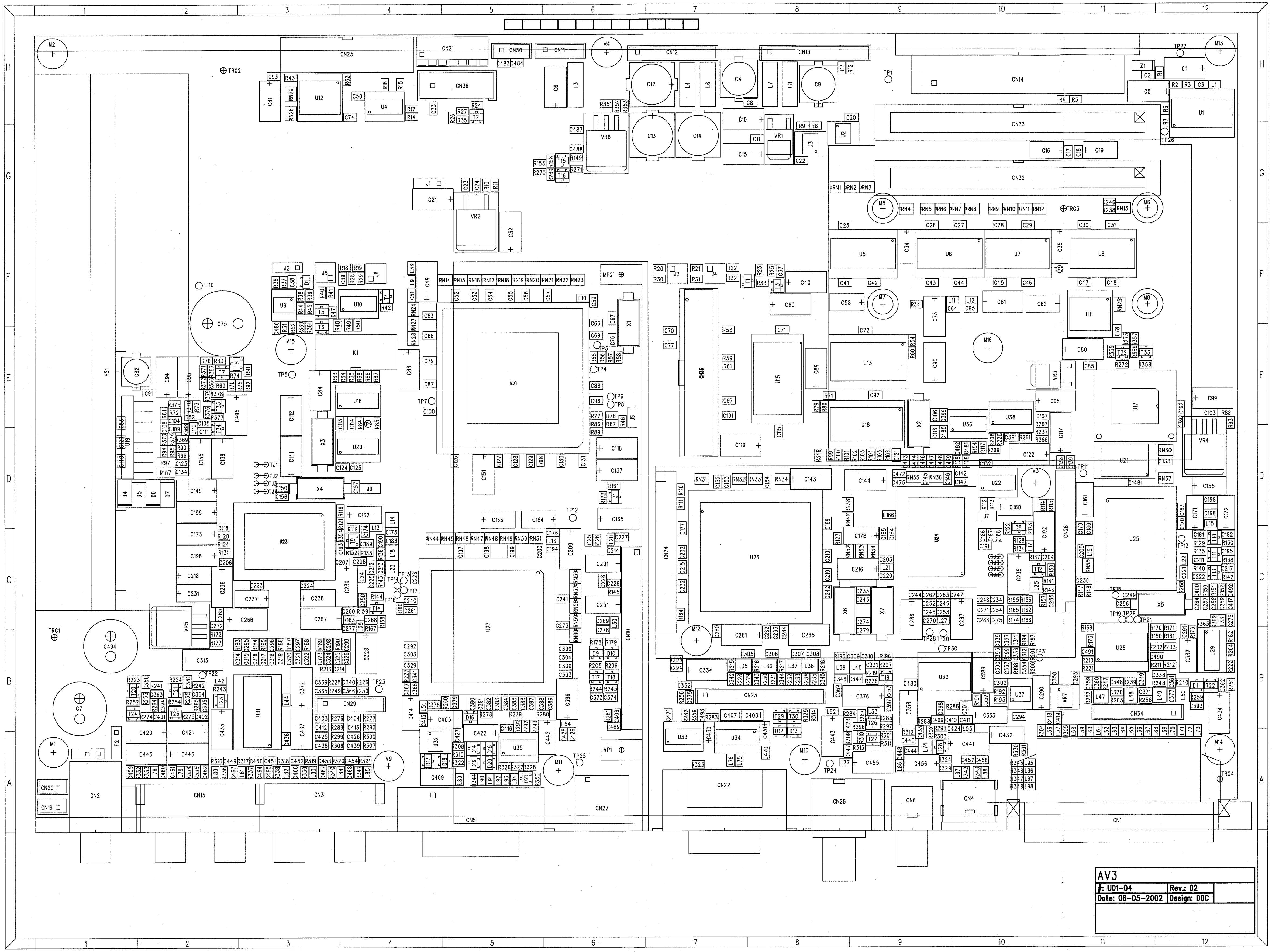
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D
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CN21
CN36
CN30
CN11
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CN34
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CN15
CN3
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CN22
CN28
CN6
CN4
CN1
CN20
CN19
CN29
U1
U2
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U29
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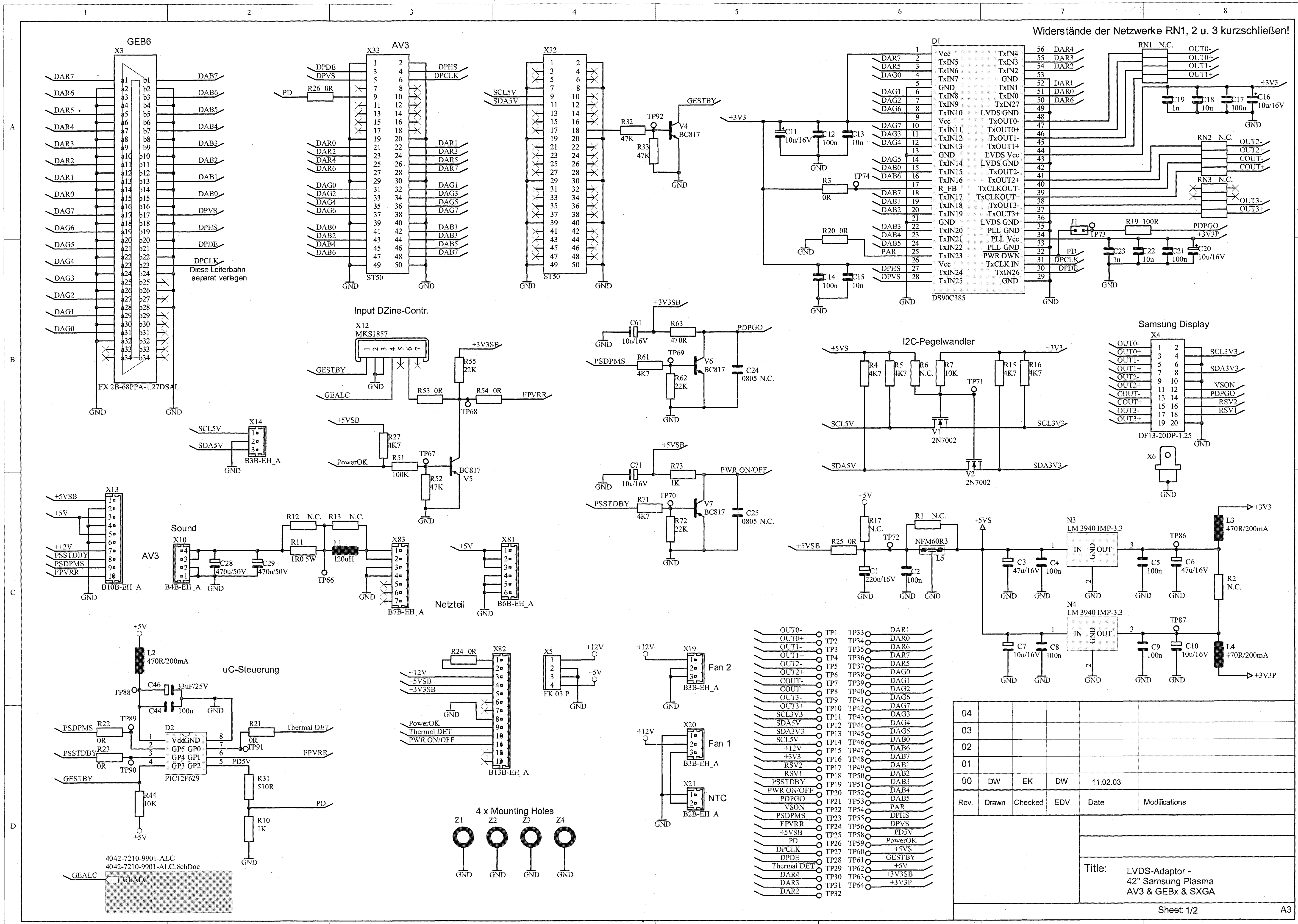
U31
U32
U33
U34
U35
U36
U37
U38
VR1
VR2
VR3
VR4
VR5
VR6
VR7
K1
X1
X2
X3
X4
X5
X6
X7
HS1
M1
M2
M3
M4
M5
M6
M7
M8
M9
M10
M11
M12
M13
M14
M15
M16
MP1
MP2
TRG1
TRG2
TRG3
TRG4
F1
F2
C7
C75
C494

AV3
#: U01-04
Rev.: 02
Date: 06-05-2002
Design: DDC



GEB6
X3
FX 2B-68PPA-1.27DSAL
AV3
X33
ST50
X32
Input DZine-Contr.
X12
MKS1857
GESTBY
GEALC
FPVRR
PowerOK
BC817
V5
X14
B3B-EH_A
SCL5V
SDA5V
X13
B10B-EH_A
+5VSB
+5V
+12V
PSSTDBY
PSDPMS
FPVRR
Sound
X10
B4B-EH_A
C28 470u/50V
C29 470u/50V
R11 1R0 5W
L1 120uH
X83
B7B-EH_A
X81
B6B-EH_A
Netzteil
uC-Steuerung
D2
PIC12F629
L2 470R/200mA
C46 33uF/25V
C44 100n
Thermal DET
PD5V
R31 510R
R10 1K
4042-7210-9901-ALC
4042-7210-9901-ALC.SchDoc
GEALC
X82
B13B-EH_A
+12V
+5VSB
+3V3SB
Thermal DET
PWR ON/OFF
X5
FK 03 P
4 x Mounting Holes
Z1
Z2
Z3
Z4
X19
Fan 2
X20
Fan 1
X21
NTC
B2B-EH_A
V4 BC817
TP92
R32 47K
R33 47K
+3V3SB
C61 10u/16V
R63 470R
PDPGO
PSDPMS
V6 BC817
C24 0805 N.C.
+5VSB
C71 10u/16V
R73 1K
PWR ON/OFF
PSSTDBY
V7 BC817
C25 0805 N.C.
D1
DS90C385
RN1 N.C.
RN2 N.C.
RN3 N.C.
OUT0-
OUT0+
OUT1-
OUT1+
OUT2-
OUT2+
COUT-
COUT+
OUT3-
OUT3+
C16 10u/16V
C17 100n
C18 10n
C19 1n
R19 100R
+3V3P
C20 10u/16V
C21 100n
C22 10n
C23 1n
I2C-Pegelwandler
V1 2N7002
V2 2N7002
SCL3V3
SDA3V3
Samsung Display
X4
DF13-20DP-1.25
VSON
RSV2
RSV1
X6
N3 LM 3940 IMP-3.3
N4 LM 3940 IMP-3.3
L3 470R/200mA
L4 470R/200mA
L5 NFM60R3
C1 220u/16V
+5VS
+3V3
+3V3P
GND

Widerstände der Netzwerke RN1, 2 u. 3 kurzschließen!

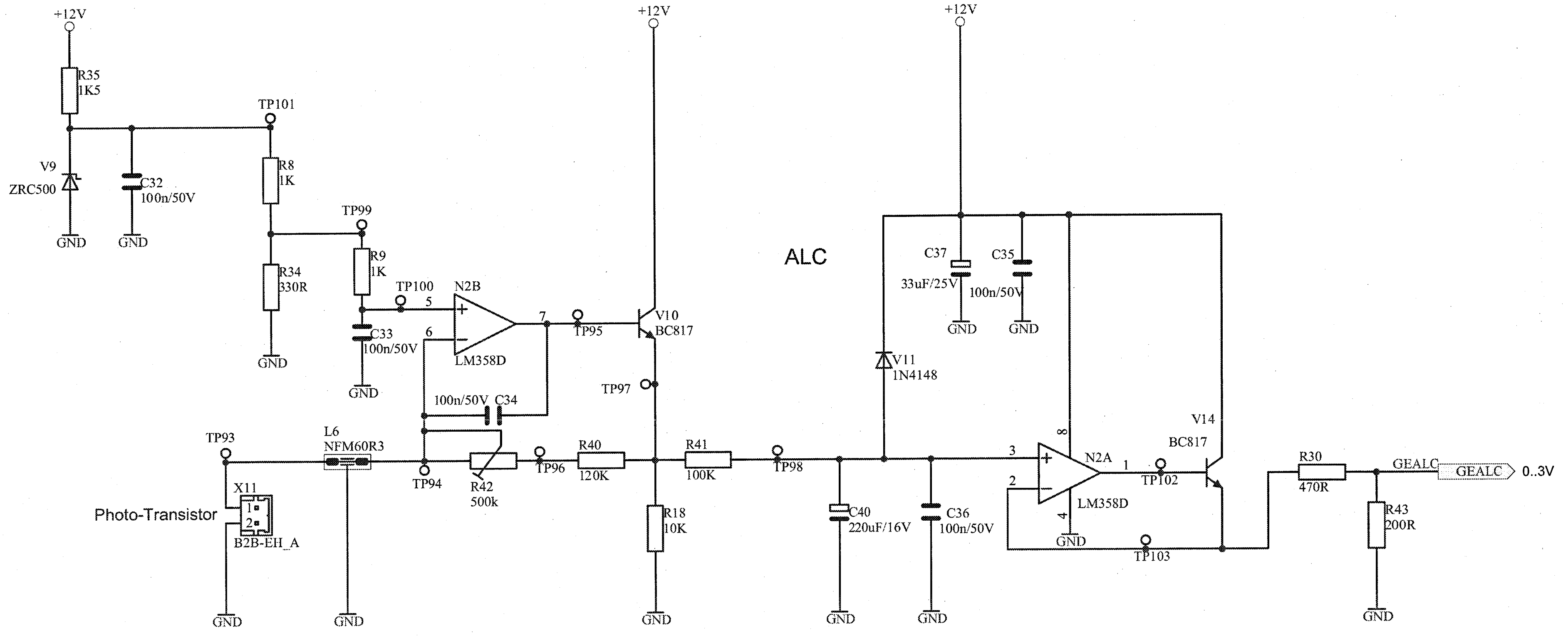
Diese Leiterbahn separat verlegen

04					
03					
02					
01					
00	DW	EK	DW	11.02.03	
Rev.	Drawn	Checked	EDV	Date	Modifications

Title: LVDS-Adaptor -
42" Samsung Plasma
AV3 & GEBx & SXGA

Sheet: 1/2

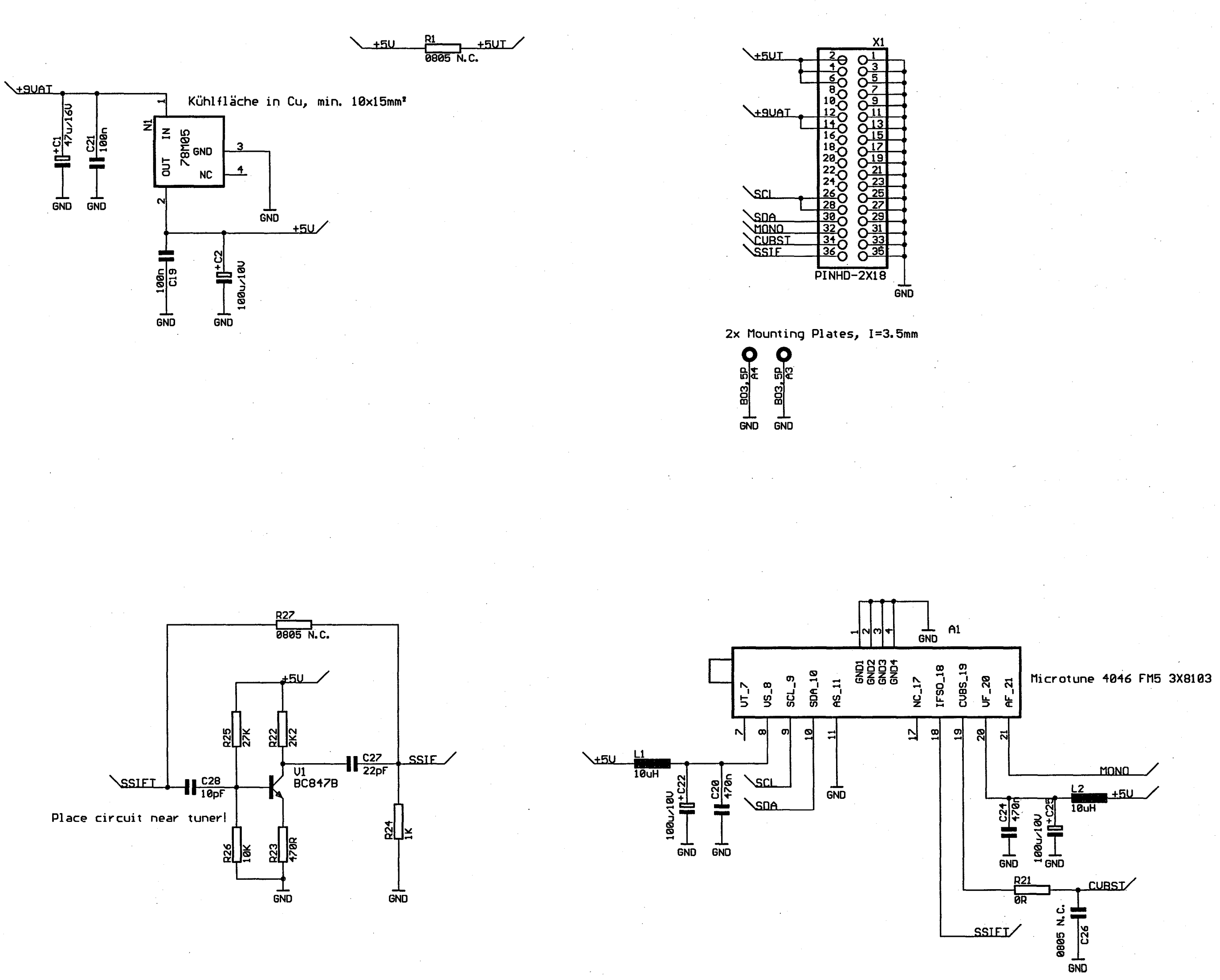
A3


+12V
R35
1K5
V9
ZRC500
C32
100n/50V
GND
GND
TP101
R8
1K
R34
330R
GND
TP99
R9
1K
TP100
N2B
5
6
7
LM358D
C33
100n/50V
GND
TP95
+12V
V10
BC817
TP97
100n/50V
C34
TP93
L6
NFM60R3
X11
1
2
B2B-EH_A
Photo-Transistor
GND
GND
TP94
R42
500k
TP96
R40
120K
R41
100K
TP98
R18
10K
GND
ALC
+12V
C37
33uF/25V
C35
100n/50V
GND
GND
V11
1N4148
C40
220uF/16V
C36
100n/50V
GND
GND
3
2
8
4
N2A
LM358D
GND
1
TP102
TP103
V14
BC817
R30
470R
R43
200R
GND
GEALC
GEALC
0..3V

04					
03					
02					
01					
00	DW	EK	DW	11.02.03	
Rev.	Drawn	Checked	EDV	Date	Modifications

Title: LVDS-Adaptor
42" Samsung Plasma
AV3 & GEBx & SXGA

Sheet: 2/2
A3


+9VAT
+C1
47u/16V
C21
100n
GND
N1
IN
OUT
78M05
GND
NC
1
2
3
4
Kühlfläche in Cu, min. 10x15mm²
+5V
100n
C19
+C2
100u/10V
+5V
R1
0805 N.C.
+5VT
X1
PINHD-2X18
+5VT
+9VAT
SCL
SDA
MONO
CVBST
SSIF
2x Mounting Plates, I=3.5mm
B03,5P
A4
A3
R27
0805 N.C.
R25
27K
R22
2K2
C28
10pF
C27
22pF
V1
BC847B
SSIFT
SSIF
Place circuit near tuner!
R26
10K
R23
470R
R24
1K
A1
GND1
GND2
GND3
GND4
VT_7
VS_8
SCL_9
SDA_10
AS_11
NC_17
IFSO_18
CVBS_19
VF_20
AF_21
Microtune 4046 FM5 3X8103
L1
10uH
+C22
100u/10V
C20
470n
C24
470n
+C25
100u/10V
L2
10uH
R21
0R
C26
0805 N.C.
MONO
CVBST
SSIFT

05						
04						
03						
02						
01						
00	A00	E.K.	E.K.	E.K.	02.10.03	
REV DWG	STAT PCB	BY DWG	BY CHKD	EDV	DATE	MODIFICATION COMPONENTS

NEXT ASSBLY.

Tuner Board
Microtune 3X8103 Tuner
für AV3 u. AV3plus

File: 4042-6401-9901

DRAWING NUMBER:
4042-6401-9901

Sheet: 1/1 A3